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PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS OF THE SOCIETY

SIXTY-EIGHTH ANNUAL MEETING*

January 19th, 1921.—The meeting was called to order at 10 A. M. in the Auditorium of the Engineering Societies Building; President Arthur P. Davis in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 710 members.

The President announced the appointment of Messrs. F. B. Church, *Chairman*, C. S. Bilyeu, A. W. Carpenter, Clement E. Chase, W. T. Chevalier, W. H. Chorlton, C. E. Conover, B. L. Cushing, R. de Charms, Jr., Irving Demarest, H. S. Devlin, B. C. Donham, W. A. E. Doying, Boyd Ehle, Torris Eide, A. C. Everham, J. F. Fairchild, S. E. Fairchild, Jr., Felder Furlow, R. R. Graham, W. G. Grove, N. C. Grover, H. P. Hammond, George P. Janes, J. M. Johnson, C. A. McCullough, A. B. McGrew, F. R. McMillan, David Meriwether, Jr., F. H. Newell, C. W.

* A full account of the Sixty-eighth Annual Meeting is printed on pages 175 to 216 of this number of *Proceedings*.

Ogden, George Paaswell, George Perrine, B. B. Priest, P. J. Reich, Samuel I. Sacks, J. A. Sargent, L. H. Shoemaker, F. L. Stearns, J. S. Swindells, H. S. Van Scoyoc, A. Travers-Ewell, J. E. Wadsworth, J. J. Walker, and T. S. Williams, as Tellers to canvass the Ballot for Officers for the ensuing year.

The Annual Report of the Board of Direction, and the Annual Reports of the Secretary and of the Treasurer* for the year ending December 31st, 1920, were presented and accepted.

The Acting Secretary read a report of the Committee to Recommend the Award of Prizes†, and announced that the medals and prizes for the year ending July, 1920, had been awarded by the Board of Direction in conformity with that report, as follows:

THE NORMAN MEDAL to Paper No. 1426, "The Economics of Steel Arch Bridges", by J. A. L. Waddell, M. Am. Soc. C. E.

THE J. JAMES R. CROES MEDAL to Paper No. 1461, "Arched Dams", by B. A. Smith, M. Am. Soc. C. E.

THE THOMAS FITCH ROWLAND PRIZE to Paper No. 1460, "Revision of the Niagara Railway Arch Bridge", by Charles Evan Fowler, M. Am. Soc. C. E.

THE JAMES LAURIE PRIZE to Paper No. 1435, "Water Supply for the Camps, Cantonments, and Other Projects Built by the Construction Division of the United States Army", by Dabney H. Maury, M. Am. Soc. C. E.

THE COLLINGWOOD PRIZE FOR JUNIORS to Paper No. 1427, "Verification of the Bazin Weir Formula by Hydro-Chemical Gaugings", by Floyd A. Nagler, Jun. Am. Soc. C. E.‡

The Acting Secretary presented the report of the Tellers appointed by the Board of Direction to canvass the Final Suggestions for Members of the Nominating Committee, to represent certain districts, and the following were appointed to serve for two years:

W. T. Chevalier.....	Representing District No. 1
A. L. Johnson.....	" " " 3
J. H. Van Wagenen.....	" " " 5
G. H. Tinker.....	" " " 6
F. E. Weymouth.....	" " " 10
J. H. Brillhart.....	" " " 11
Thomas H. Means.....	" " " 13

Robert A. Cummings, Vice-President, Am. Soc. C. E., Chairman of the Special Committee to Codify Present Practice on the Bearing Value of Soils for Foundations, etc., presented a progress report,§ which, on motion, duly seconded and carried, was accepted and the Committee continued.

Arthur N. Talbot, Past-President, Am. Soc. C. E., Chairman of the Special Committee to Report on Stresses in Railroad Track, presented a brief progress report.|| This was accepted, and on motion, duly seconded and carried, the Committee was continued.

* For these reports see pages 275 to 286.

† See page 176.

‡ Mr. Nagler was elected Associate Member on May 13th, 1918, after this paper was written.

§ See page 9 of Papers and Discussions.

|| See *Proceedings*, Am. Soc. C. E., December, 1920, p. 916.

The Acting Secretary read a brief progress report* of the Special Committee on Highway Engineering submitted by its Chairman, H. Eltinge Breed, M. Am. Soc. C. E. On motion, duly seconded and carried, the report was received and the Committee continued.

C. W. Hudson, M. Am. Soc. C. E., a member of the Special Committee to Consider and Recommend for Adoption a Specification for Bridge Design and Construction, in the temporary absence of its Chairman, Henry B. Seaman, M. Am. Soc. C. E., reported progress in the work of that Committee, and the Committee was continued.

C. E. Grunsky, M. Am. Soc. C. E., reported progress in the work of the Alfred Noble Memorial Committee, of which Onward Bates, M. Am. Soc. C. E., is Chairman. The Committee was continued.

Leonard Metcalf, Vice-President, Am. Soc. C. E., presented the reports of the Committee on External Relations and the Committee of Past-Presidents, together with the resulting action of the Board of Direction.†

Peter Junkersfeld, M. Am. Soc. C. E., presented the report of the Committee on Referred Amendments. On motion, duly seconded and carried, action on this report was then deferred until after the consideration of certain new amendments to the Constitution which had been offered and sent to the membership under date of December 4th, 1920. There ensued a parliamentary discussion on motions and substitute motions to refer these amendments either to a committee to report later to the meeting, or to the Committee on Referred Amendments. After considerable discussion, it was finally moved, seconded and carried, that all the pending amendments, including those postponed from the Portland, Ore., Convention as well as the new amendments, should be sent to letter-ballot with the recommendation that they be not adopted.

On motion, duly seconded and carried, the Committee on Referred Amendments was continued in order to submit a new Constitution and By-Laws to the Society in time to be considered at the next Annual Convention. During the consideration of this motion, a proposed amendment to increase the representation on this committee was defeated.

The Acting Secretary announced the election of the following candidates on January 17th, 1921:

AS MEMBERS

JOHN BAKWELL, JR., San Francisco, Cal.

GEORGE WILLIAM CHICKERING, Boston, Mass.

WALTER ABBOTT CONLEY, New York City.

RICHARD BARNETT DERICKSON, Washington, D. C.

LAURENCE MONROE KLAUBER, San Diego, Cal.

WILLIAM CHESTER MORSE, Seattle, Wash.

JAMES MUNN, Denver, Colo.

HAMILTON MORTON STEPHENS, Detroit, Mich.

WALTER AUGUSTUS SUMNER, New York City.

PERRY THOMPSON, Yonkers, N. Y.

BOYNTON STEPHEN VOORHEES, New York City

* See page 178.

† See page 208.

AS ASSOCIATE MEMBERS

JAMES MACFARLANE ANGLE, Pittsburgh, Pa.
FRANK BAGGE, New York City
WILLIAM CHRIS EMIL BECKER, St. Louis, Mo.
CLINTON LINUS AUGUST BOCKEMOHLE, Kansas City, Mo.
CLAUDE BRIGHAM BOYNTON, Great Falls, Mont.
GEORGE REITZLE BROOKS, Cheltenham, Pa.
ARTHUR RICHMOND CARVER, Cleveland, Ohio
JAMES BURLEIGH CHENEY, New York City
ALFRED HENRY CLARKE, St. Louis, Mo.
CUTHBERT POWELL CONRAD, Madison, Wis.
THOMAS CHARLTON DAVIS, Cleburne, Tex.
JOHN FRANCIS DEEDS, Washington, D. C.
ALBERT DIAMANT, Tocopilla, Chile
GEORGE ALBERT DORNBUSH, Pittsburgh, Pa.
CHARLES EDSON DOUGLAS, Yankton, S. Dak.
GLENN DRURY DOUGLASS, Little Rock, Ark.
DANIEL DULL, Columbus, Ga.
FREDERICK WARREN ELY, Pittsburgh, Pa.
CARL ALLEN FRIEDMANN, Los Angeles, Cal.
FRANCIS DE SALES FRIEL, Philadelphia, Pa.
HOWARD BABCOCK GATES, Los Angeles, Cal.
GEORGE WILLIS HAMLIN, Cleveland, Ohio
CASPAR WISTAR HAUPT, Chicago, Ill.
THEODORE BOGVAD HOST, Stockholm, Sweden
CORNELIUS JACOBY, Washington, D. C.
MARION DEN HERDER KOLYN, Philadelphia, Pa.
JOHN HAROLD MACKINNON, New York City
MALCOLM JONES MACNABB, Philadelphia, Pa.
GEORGE BREWER McCLARY, Chicago, Ill.
FRANCIS CONOVER McMILLAN, Pasadena, Cal.
FRANCIS DOUGLAS MAHONE, San Francisco, Cal.
COLEMAN BROWN MARK, Harrisburg, Pa.
JUAN GABRIEL MOLINA, Merida, Yucatan, Mexico
JACK MOSKOWITZ, Portland, Ore.
ARTHUR LEONARD MULLERGREN, Kansas City, Mo.
CLARENCE EUGENE MYERS, Philadelphia, Pa.
HARRY NAGIN, Brooklyn, N. Y.
CHARLES LOUIS NORD, New Haven, Conn.
EDWARD CULLODEN PANTON, King Hill, Idaho
MAURICE PARSONS, Atlanta, Ga.
GEORGE FREDERICK PFEIFFER, East Akron, Ohio
JOHN WILLIAM PICKWORTH, New York City
CLYDE ARTHUR PLASKETT, Madison, Wis.
EDWARD POLLITT, Philadelphia, Pa.
RASMUS RASMUSSEN, Portland, Ore.
JOHN GEORGE REINKE, Dayton, Ohio

SYDNEY LIONEL ROTHERY, Calexico, Cal.
RAYMOND POOL SCATTERFIELD, Dallas, Tex.
GUSTAV SCHIRMER, Chicago, Ill.
EDWARD CLEVER SEIBERT, Washington, D. C.
NILS OTTO SJOLANDER, Omaha, Nebr.
HARRY THOMAS SPENGLER, Easton, Pa.
GEORGE PERROY SPRINGER, Washington, D. C.
ERNEST JOSEPH STRAUB, Kansas City, Mo.
HENRY TAFT STRONG, Pittsfield, Mass.
THEODORE RICHARD SUCHER, New Haven, Conn.
CLINTON GEORGE TOLLEY, New York City
GEORGE FREDERICK UNGER, Buffalo, N. Y.
KENNETH QUINTON VOLK, Los Angeles, Cal.
FRED VON ROY, Jr., Rainelle, W. Va.
ROBERT GARNETT WAGGENER, Dallas, Tex.
MELVIN DELANO WILLIAMS, Ogden, Utah
ERNEST LAVERNE WOLF, Vallejo, Cal.
HARVEY HENRY WONNING, Massillon, Ohio
OWEN ZELOTES WRENN, Charlotte, N. C.
WILLIAM WALTER ZASS, Jr., Chicago, Ill.

As ASSOCIATES

DUNCAN CAYRE SMITH, East St. Louis, Ill.

As JUNIORS

MALCOLM BOYD ARTHUR, Lima, Peru.
EUGENIO COSCULLUELA Y BARRERAS, Havana, Cuba
ALBERT DICK, New York City
SAMUEL SINCLAIR ELKINS, Allston, Mass.
CHARLES SIEGLE FRANZEN, Philadelphia, Pa.
EDWIN FISH GOULD, Madison, Wis.
ARTHUR IRVING HEIM, Meridian, Miss.
HOWARD ADAMS HUBBELL, Ann Arbor, Mich.
JACOB LEON LENOVITZ, Lock Haven, Pa.
PERCIVAL ARTHUR MARTIN, Newark, N. J.
HARRY HELMUTH MEYER, New York City
DONALD IRVING SEYMOUR, San Francisco, Cal.
PATRICK HENRY TANSEY, Corvallis, Ore.
WALTON STALEY WICKER, Atlanta, Ga.

The Acting Secretary announced the transfer of the following candidates on January 17th and 18th, 1921:

FROM ASSOCIATE MEMBER TO MEMBER

PERCIVAL STEVENS BAKER, Langhorne, Pa.
CHARLES NORTON BOULT, Westport, New Zealand
NORMAN BUTLER CONWAY, Yuma, Ariz.
EDWARD JEAN BERNARD DE MEY, Pittsburgh, Pa.
EDMUND JOSEPH FITZMAURICE, Philadelphia, Pa.

RALPH JUSTIN FOGG, Bethlehem, Pa.
SYLVAN EARLE GANSER, St. Paul, Minn.
STUART CHAPIN GODFREY, Florence, Ala.
CLEVES HARRISON HOWELL, Denver, Colo.
THOMAS KEITH LEGARE, Columbia, S. C.
ROGER BARTON MCWHORTER, Hamilton, Ohio
ISAAC SOLON MATLAW, New York City
JONATHAN RHODES SMITH, Bethlehem, Pa.
JOHN DAVIDSON SPINKS, Salem, N. C.
RICHARDS MERLE STROHL, Winston-Salem, N. C.
CLEOPHUS SWECKER, Philippi, W. Va.
FRED TARRENT, Springfield, Ill.
EPHRAIM MARTIN VAIL, Plainfield, N. J.
ALLAN JOHN WAGNER, Sacramento, Cal.
HARRY ARTEMAS WELLS, Hanover, N. H.
LAZARUS WHITE, New York City
PAUL PAGE WHITMAN, New York City
DANA MELVIN WOOD, Boston, Mass.

FROM JUNIOR TO ASSOCIATE MEMBER

LEO MURRY ARMS, Peoria, Ill.
ARTHUR TAYLOR PRAGONIER, Morgantown, W. Va.
HAROLD FOLLMER BUCHER, Pittsburgh, Pa.
MICHAEL JOSEPH BURKE, Seattle, Wash.
KARL MCCORTLE COSGROVE, Cambridge, Ohio
NORMAN ARTHUR DEISER, Brooklyn, N. Y.
LESLIE STANDISH HALL, Oakland, Cal.
ALVIN ARTHUR HORWEGE, Reno, Nev.
HARVEY STONE JOHNSON, Utica, N. Y.
WILLIAM JOHN KREFELD, New York City
FREDERICK GEORGE MERCKEL, Morsemere, N. J.
TOSHIYUKI OKUBO, Youngstown, Ohio
JOHN SANFORD PECK, New York City
ALFRED RHEINSTEIN, New York City
SEATON SCHROEDER, JR., Montclair, N. J.
HARLOWE MCVICKER STAFFORD, Corcoran, Cal.
UEL STEPHENS, Ballinger, Tex.
CHARLES WILLIAM VAN DYKE, New York City
JOHN WAGNER, JR., Philadelphia, Pa.
CHAUNCEY EARL WEBB, Gary, Ind.
THEODORE LADD WELLES, JR., Cleveland, Ohio

The Acting Secretary announced the following deaths:

ADOLPH EUGENE SCHNEEWEISS, of Paterson, N. J., elected Member, October 5th, 1909; died December 25th, 1920.

GEORGE STEELE SKILTON, of Rockville Center, N. Y., elected Member, September 7th, 1881; died January 10th, 1921.

J. P. H. Perry, M. Am. Soc. C. E., Chairman of the Committee of Arrangements, outlined the details of the various inspection trips and excursions* arranged by the Committee for the entertainment of the members on Wednesday afternoon and Thursday.

The President announced the receipt from *Engineering News-Record* of an offer of \$2 000 for the establishment of a permanent Memorial to the late Arthur M. Wellington, M. Am. Soc. C. E., and its acceptance by the Board of Direction.† He also announced a request for a meeting of members of all committees formed for the purpose of securing the appointment of an engineer to the Interstate Commerce Commission.

After announcement by the President that the Tellers were not yet ready to report, on motion, duly seconded and carried, as amended, the meeting recessed until 1.15 P. M.

FIRST AFTERNOON SESSION.

The meeting was called to order at 1.15 P. M. in the Auditorium; President Davis in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 650 members.

The President announced that the Tellers appointed to canvass the Ballot for Officers had not yet completed their work.

Mr. Perry announced that, in view of the great number of inquiries as to the name of the speaker to address the members at the Annual Smoker, the Committee of Arrangements had decided to change the plan of withholding the announcement, as first contemplated, and to state that the speaker would be Mr. Francis H. Sisson, Vice-President of the Guaranty Trust Company, New York City.

On motion, duly seconded and carried, the meeting recessed until 2.30 P. M.

SECOND AFTERNOON SESSION.

The meeting was called to order at 2.30 P. M., in the Auditorium; President Davis in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 850 members.

The President announced that the report of the Tellers was not ready, and called for any new business. None being offered, he then discussed briefly some of the fundamental principles of agreement to which all members, regardless of other differences, could subscribe, and urged a spirit of harmony whatever the result of the pending ballot might be.

Charles Hansel, M. Am. Soc. C. E., requested the benefit of discussion of the situation regarding the appointment of an engineer to the Interstate Commerce Commission, for the information of the Committee of the Society, of which he is Chairman, appointed to join with committees of other Societies in this endeavor. Alexander C. Humphreys, M. Am. Soc. C. E., discussed the subject, and urged the Society to strive persistently for this form of recognition of the Profession.

The President invited Vice-President Metcalf to report to the meeting, for its information, the action taken by the Committee on Special Committees in regard to a proposal that the Society should take active part in the work of highway

* See page 217.

† See page 166.

research and the improvement of public roads. Mr. Metcalf explained the situation, and read letters* from Hunter McDonald, Past-President, Am. Soc. C. E., and John M. Goodell, Assoc. Am. Soc. C. E., on the subject. He also read the report† of the Committee on Special Committees as submitted to the Board of Direction, and reported its adoption by the Board.

The President presented the report of the Tellers appointed to canvass the Ballot for Officers for the ensuing year, and announced the election of the following:

President, to serve one year:

GEORGE S. WEBSTER, Philadelphia, Pa.

Vice-Presidents, to serve two years:

ANDREW M. HUNT, New York City

EDWARD E. WALL, St. Louis Mo.

Treasurer, to serve one year:

OTIS E. HOVEY, New York City

Directors, to serve three years:

JOHN P. HOGAN, New York City

IRA W. MCCONNELL, New York City

RICHARD L. HUMPHREY, Philadelphia, Pa.

BAXTER L. BROWN, St. Louis, Mo.

FRANK T. DARROW, Lincoln, Nebr.

GEORGE G. ANDERSON, Los Angeles, Cal.

Messrs. J. Waldo Smith and Allen Hazen, Members, Am. Soc. C. E., were appointed a Committee of two to escort President Webster to the chair.

Mr. Webster addressed the meeting briefly.

On motion, duly seconded and unanimously carried, the meeting recorded its appreciation of the manner in which Mr. Davis had presided over its sessions. Past-President Davis responded briefly.

Adjourned.

February 2d, 1921.—The meeting was called to order at 8 p. m.; Vice-President Francis Lee Stuart in the chair; Herbert S. Crocker, Acting Secretary; and present, also, 243 members and guests, including several ladies.

The minutes of the meeting of January 5th, 1921, were approved as printed in *Proceedings* for January, 1921.

M. J. McPike, Assoc. M. Am. Soc. C. E., moved that there be spread on the minutes of this meeting a formal expression of appreciation of the excellent manner in which the entertainments and excursion trips at the Annual Meeting of the Society had been arranged, and that especial mention be made of the entertainment furnished by the Metropolitan Life Insurance Company. This motion was duly seconded and unanimously carried.

John Lyell Harper, M. Am. Soc. C. E., Vice-President and Chief Engineer of the Niagara Falls Power Company, gave an interesting address on the subject

* See pages 210 and 212.

† See page 158.

"Construction of the World's Largest Hydro-Electric Units". He described in detail the latest plant of the Company, in which are installed three 40 000 h.p. units, and gave an informal brief history of the power developments at Niagara Falls, illustrated by lantern slides and colored moving pictures. The subject was discussed by T. Kennard Thomson, M. Am. Soc. C. E.

The Acting Secretary announced the following deaths:

DAVID CARLISLE HUMPHREYS, of Lexington, Va., elected Member, November 2d, 1887; died January 11th, 1921.

WILLIAM HARPER ROBINSON, of Novato, Cal., elected Member, March 1st, 1910; died December 29th, 1920.

M. EVERHART SMITH, of New York City, elected Member, May 7th, 1879; died January 24th, 1921.

ANTHONY GEORGE ARMSTRONG, of Philadelphia, Pa., elected Associate Member November 9th, 1920; died January 24th, 1921.

Adjourned.



OF THE BOARD OF DIRECTION

(Abstract)

January 17th, 1921.—The Board met at 10.02 A. M., at the Headquarters of the Society; President Davis in the chair; H. S. Crocker, Acting Secretary; and present, also, Messrs. Clark, Cummings, Curtis, Elwell, Fort, Greene, Grunsky, Henny, Herschel, Hoyt, Hudson, Ketchum, Marx, Metcalf, O'Connor (came in at 10.25), Pegram, Stuart (came in at 10.20), Talbot, Tuttle, and Wall.

The minutes of the meetings of the Board of Direction held November 9th and 10th and December 6th, 1920, were approved.

The President appointed Messrs. Cummings, Wall and Greene as Tellers to canvass the Membership Ballot. The Tellers subsequently reported, and the President declared the election of candidates.*

RULES FOR CANVASS OF BALLOT FOR OFFICERS.

The Acting Secretary presented certain proposed rules to govern the canvass of the Ballots for Officers. On motion of Past-President Marx, seconded by Past-President Talbot, these rules were, after discussion, unanimously adopted in the following form:

1.—The count shall not begin until after the Canvassing Committee has been formally appointed by the Presiding Officer on the day of the Annual Meeting.

2.—Ballots shall be rejected from those (a) in arrears of dues; (b) whose resignations from the Society have been accepted as of December 31st of the preceding year; (c) who have died since voting; (d) who have not identified their ballots by their written signatures—lettered, stamped or printed names, initials only, or similar means of identification other than by written signature shall not be recognized.

3.—Counts of ballots which are scratched shall be made as to the candidates severally, the intention being to record the desire of the voter in so far as it shall be clearly indicated by him. Failure to vote correctly for one or more candidates will not invalidate the votes for the remaining candidates on the same ticket.

4.—Ballots need not necessarily be upon the stationery or enclosed within the envelopes furnished by the Society, so long as they comply with the provisions of the Constitution.

5.—Ballots shall be counted as a whole and not by districts.

The Committee appointed by the Board at its meeting of August 9th, 1920, to canvass the Preliminary and Final Suggestions for Members of the Nominating Committee, reported through its Chairman, George H. Clark, the final suggestions to fill vacancies in the membership of the Nominating Committee.†

Chairman Herschel presented the report of the Finance Committee dated January 17th, 1921, which was accepted and action taken as to its several items in detail.

REPORTS OF PUBLICATION, LIBRARY, AND RE-DISTRICTING COMMITTEES.

A verbal report of progress was made by Mr. Elwell, Chairman of the Publication Committee.

* See page 149.

† See page 176.

Mr. Cummings, Chairman of the Library Committee, made a verbal report of progress, including mention of a topographical map of the United States which has been presented to the Society by Director Hoyt. On motion, the thanks of the Board were extended to Mr. Hoyt.

Chairman Hoyt of the Committee on Re-districting reported that in view of the probability that amendments may be made to the Constitution involving a change in the number of districts, the Committee considers it unwise to proceed further at the present time.

On motion, this report was accepted and later the Committee was discharged.

REPORTS OF COMMITTEE ON SPECIAL COMMITTEES.

Various reports were made by the Committee on Special Committees, through its Acting Chairman, Vice-President Metcalf. These were discussed, and action taken as hereinafter set forth.

1.—The following extracts are from the report regarding the appointment of a Committee on Electrification of Steam Railways:

"DECEMBER 23D, 1920.

"TO THE BOARD OF DIRECTION,
AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN: Your Committee on Special Committees takes pleasure in submitting its report upon the desirability of the appointment of a Committee on Electrification of Steam Railroads.

"Mr. A. M. Dimock, City Engineer of Seattle, Wash., urged the appointment of such a committee with a view to the presentation to the proper railway and governmental authorities and to the public, of an accurate statement of facts concerning the extravagant waste of coal involved in the continued use of steam locomotives rather than the substitution of electric locomotives supplied with current developed by water power or central generating stations driven by steam power.

"To post itself the Committee sent to a selected list of engineers the following questionnaire:

"NOVEMBER 20TH, 1920.

"DEAR SIR: The suggestion has been made to the Board of Direction of the American Society of Civil Engineers that it would be desirable to appoint a Committee on the Electrification of Steam Railroads, to investigate and report to the Society on the subject.

"The request was referred to the Committee on Committees, consisting of Mr. John W. Alvord, Prof. Anson Marston, and the writer, for consideration and report to the Board. I should value your judgment as to:

"1.—The wisdom and expediency of the appointment of such a committee at the present time, and, if you think the appointment of such a committee desirable,

"2.—The desirability of co-operating with like committees of other societies, giving the names of such societies if you think such co-operation desirable;

"3.—The names of men best qualified and most available for service on such a committee;

"4.—The scope of the investigation to be undertaken, or the limitations to be placed upon the work of the committee;

"5.—The possible financial provision which ought to be made for the committee's activities, if you have any impressions in regard to this phase of the matter. Unfortunately the financial situation of the Society is a trying one at the present time, but this should not prevent the appointment of such a committee if the best interests of the Society will be thus subserved."

"*Gist of Opinions Canvassed.*—From the replies received it is clear that the opinion of the men addressed is about equally divided upon the desirability, of

otherwise, of appointing such a committee. It is perhaps significant, however, to note that those who have had the most intimate recent experience with the problem do not approve the appointment of such a committee.

"Substantially all agree that if appointed the committee should co-operate with like committees of other National societies and that the scope of the work should be broad and constructive and to a great extent determined by the committee itself.

"Societies Already Investigating the Subject.—The following Societies already have committees actively at work upon this subject:

"American Railway Engineering Association; American Railroad Association; American Society of Mechanical Engineers; American Institute of Electrical Engineers; Superpower Survey (Mr. Murray for the U. S. Government).

"Of these, the last mentioned deserves particular reference, because of the fact that the U. S. Government itself is much interested in the investigation and has supplied the necessary funds for thorough inquiry.

"Some of the engineers addressed call attention to the desirability of suggesting the appointment of representatives of this Society upon certain of the existing committees rather than upon an independent committee.

"Co-operation Desirable: Duplication to be Avoided.—Your Committee is thoroughly in sympathy with the desire that the American Society of Civil Engineers should keep in touch with the times, should lend its influence to progressive development and that it should co-operate in fullest measure with other National professional societies. On the other hand, useless duplication is to be avoided and it is to be remembered that many of the members of this Society are numbered in the existing committees of other National societies working in this field, such as the American Railroad Association and the American Railway Engineering Association.

"Recommendations.—In view of the fact that this work will be undertaken under the new Board of Direction, and of the marked division of opinion of men of ability and experience in these matters, your Committee recommends:

"1.—That action upon this matter be referred to the incoming Board of Direction;

"2.—That copies of this report, with attached exhibits, be prepared for the members of the Board of Direction, for such assistance as they may be able to derive from them;

"3.—That if a committee be appointed it should, if possible, co-operate with existing committees already carrying on investigations in this field.

"4.—* * * (This paragraph of the report is devoted to suggestions of personnel.)

"5.—That it be remembered that if such a committee be appointed, to co-operate with other committees, or if the Society ask for the privilege of appointing additional men from its membership, to existing committees in other societies, the Society will be obligated to support the inquiry financially.

"The Committee regrets that absence in Hawaii has prevented Mr. Alvord from joining in this report.

"Respectfully submitted,

(Signed) "LEONARD METCALF, *Acting Chairman*,
"ANSON MARSTON."

On motion of Past-President Curtis, seconded and carried, the report was approved and referred to the incoming Board of Direction.

HIGHWAY ENGINEERING RESEARCH.

2.—The following report on the proposal to appoint a committee on research in problems connected with road construction, or to extend the duties of the present Committee on Highway Engineering, was presented:

"JANUARY 14TH, 1921.

"TO THE BOARD OF DIRECTION,
AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN: President Davis, under date of December 15th, 1920, referred to the Committee on Special Committees a letter addressed to him by Mr. J. B. Lippincott, of Los Angeles, under date of December 9th, 1920, transmitting a memorandum from Mr. E. E. East. In this letter Mr. Lippincott called attention to the very large Government, State and Municipal appropriations for highways, the unsatisfactory manner in which the physical and financial problems involved in road construction had been handled in this country in the past, the failure to profit by earlier and comparative experience, and the desirability that the American Society of Civil Engineers appoint a special road committee, either to act on its own initiative or to co-operate with the National Research Council in making researches in this field.

"Pursuant to this request, your Committee has considered the advisability of the appointment of a new committee or the extension of the duties of the existing Special Committee on Highway Engineering, and has sounded the opinion of fifty or more members of the Society, especially well informed and active in this field of engineering.

"Your Committee reports that:

"1.—The American Society of Civil Engineers is already co-operating actively with the National Research Council, in establishing a National programme for highway research, which will fully cover the suggestions contained in Mr. Lippincott's letter.

"2.—The Society has appointed a delegate, and alternate, to serve on the Advisory Board on Highway Research, established by the National Research Council, the Chairman of which, Dean Anson Marston, of Iowa State College, is a member of the Board of Direction of this Society.

"3.—Furthermore, the American Society of Civil Engineers has three representatives on the Engineering Division of the National Research Council, which is directly charged with this investigation of road problems.

"4.—The National Research Council (Engineering Division) has already established three Highway Research Committees, to take up specific highway problems. The Chairmen of these committees (Prof. T. R. Agg, of Ames, Iowa; Mr. A. T. Goldbeck, of the Bureau of Public Roads, Washington, D. C.; and Mr. H. S. Mattimore, Engineer of Tests, Pennsylvania State Highway Commission, Harrisburgh, Pa.) are all Corporate Members of the American Society of Civil Engineers.

"5.—Any research committee of this Society would be seriously embarrassed by the inadequate financial support which the Society could give. Highway research is of such a character as to require the expenditure of large sums of money which probably must be secured in the main from the Federal and State governments, and contributions of materials and money by manufacturing corporations.

"6.—The present Special Committee on Highway Engineering of the American Society of Civil Engineers (Messrs. H. Eltinge Breed, George W. Tillson, A. B. Fletcher, and John M. Goodell) is well qualified to act as an agency for the Society, to examine, summarize and report the results of research in this field made available from time to time by the committees and agencies already working on this important problem.

"Conclusion.—Your Committee concludes, therefore, that it is not advisable to appoint a new committee or to enlarge the functions of the present committee to engage in independent research work. It is desirable, on the other hand, that the Society should lend its moral and, so far as possible, financial support to the work being carried on in this field, particularly that of the National Research Council, and should continue its present Committee on Highway Engineering.

* * * * *

"Respectfully submitted,

(Signed) "LEONARD METCALF, Acting Chairman,
"ANSON MARSTON."

On request, Vice-President Metcalf supplemented this report by reading the letters from Hunter McDonald, Past-President, Am. Soc. C. E., and John M. Goodell, Assoc. Am. Soc. C. E.

On motion of Past-President Talbot, seconded and carried, the report was approved.

Action was also taken in ordering the printing in *Proceedings* of the letters from Messrs. Hunter McDonald and John M. Goodell previously mentioned.*

COMMITTEE ON BRIDGE DESIGN AND CONSTRUCTION.

3.—The following report with reference to the work of the Special Committee on Specifications for Bridge Design and Construction was presented:

“JANUARY 15TH, 1921.

“TO THE BOARD OF DIRECTION,
AMERICAN SOCIETY OF CIVIL ENGINEERS,
33 West 39th St., New York City.

“GENTLEMEN: Your Committee on Special Committees reports, with reference to the work of the Committee on Bridge Design and Construction, that a letter received from Mr. Henry B. Seaman, Chairman of the Committee, states that the Committee estimates the necessary expense incident to the carrying on of its work to be \$3 000 (\$2 000 for mileage and \$1 000 for stenographic assistance, stationery, postage and other incidental expense).

“Your Committee recommends that an appropriation of \$3 000 be made for the work of the Committee on Bridge Design and Construction during the year 1921, subject to the approval of the Finance Committee.

Respectfully submitted,

(Signed) “LEONARD METCALF, *Acting Chairman*,
“ANSON MARSTON.”

On motion of Past-President Marx, seconded by Vice-President Cummings, this report was accepted and its recommendations were approved.

TEACHING AS QUALIFICATION FOR ADMISSION.

Pursuant to the action of the Board at its meeting of November 9th, 1920,† in the appointment of Messrs. Ketchum, Alvord and Marston as a committee to prepare for the consideration of the Secretary, and subsequent publication in the Year Book, the phrasing of a clause in reference to the work of “Professors” in considering qualifications of applicants for membership, the Acting Secretary presented a report by the Chairman of the Committee which, after discussion and slight revision, was adopted in the following form:

“Responsible charge in engineering teaching may be construed as responsible charge of engineering work, as required by the Constitution, Article II, Sections 2 and 3.”

ANNUAL REPORT OF THE BOARD.

In accordance with the action of the Board of Direction at its meeting of November 9th, 1920, in the appointment of the Chairmen of the Standing Committees of the Board to prepare the Annual Report of the Board for the year ending December 31st, 1920, there was presented in page proof a suggested report which, after the addition of a foot-note explaining the distribution of funds to

* See pages 210 and 212.

† *Proceedings*, Am. Soc. C. E., December, 1920, p. 904.

several Committees during the year, on motion of Past-President Marx, seconded by Director Hudson, was adopted.*

Recess was taken at 1 P. M. for lunch.

AFTERNOON SESSION.

The Board reconvened at 2.30 P. M., with the same attendance as in the morning, except that Director Clark was absent, and Director Langthorn came in at 4.45 P. M.

The Committee consisting of Vice-President Metcalf and Director Tuttle, appointed at the November 9th, 1920,† meeting of the Board to co-operate with a like committee of the American Society of Mechanical Engineers with a view to the development of an Universal Code of Ethics applicable to all Engineers and Architects, presented a report descriptive of its work and containing the report‡ of the Committee of the American Society of Mechanical Engineers, and the recommendation that the matter be referred to the incoming Board for the appointment of a new committee to go on with the work.

The members of the existing Committee tendered their resignations in view of their impending retirement from the Board by virtue of the expiration of their terms of office.

On motion of Past-President Marx, the report was accepted and the Committee discharged.

MINUTES OF MEETING OF EXECUTIVE COMMITTEE.

The Acting Secretary presented the minutes of the meeting of the Executive Committee held on December 6th, 1920, extracts from which follow:

"The Executive Committee met at 4.40 P. M.; Vice-President Cummings in the chair; H. S. Crocker, Acting Secretary; and present, also, Messrs. Elwell, Herschel and Tuttle.

"The Acting Secretary presented an abstract of correspondence with the Secretary of the United Engineering Society, the Secretaries of the four Founder Societies and the representatives of the American Society of Civil Engineers on the United Engineering Society and on Engineering Council, all in regard to the proposed dissolution of Engineering Council, and suggested, for discussion, a tentative resolution embodying instructions to representatives of the Society on Engineering Council regarding the attitude of the Board of Direction on the question.

"Past-President Herschel moved that the matter be laid over until the meeting of the Board on January 17th, 1921.

"This motion was seconded by Director Elwell, and after discussion was lost by a vote of 3 to 2.

"Discussion continued, and the Secretary read in full the correspondence hereinbefore referred to. Following this, Treasurer Tuttle offered the following resolution:

"Whereas: At its meeting of November 9th, 1920, the Board of Direction instructed its representatives on Engineering Council to express to Council its hope that Engineering Council will for the present continue to carry forward its work, and

"Whereas: It now appears that the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers may, as a consequence of their having

* See page 275.

† *Proceedings*, Am. Soc. C. E., December, 1920, p. 906.

‡ See page 231.

joined the Federated American Engineering Societies, discontinue their participation in the work of Engineering Council,

"*Be It Resolved:* That the representatives of this Society on Engineering Council are hereby authorized to join with a majority of the member societies in action to terminate the existence of Engineering Council at the end of the present calendar year, with the provision that in case of termination of Council the interests of this Society shall be properly secured in whatever disposition may be involved of Council's property and records."

"This resolution was seconded by Director Elwell and adopted by the following vote: 'Ayes', Crocker, Cummings, Elwell and Tuttle; 'no', Herschel.

"Past-President Herschel requested that record be made of his position 'that the Executive Committee has no right to act in contravention to previous action of the Board of Direction.'

"Treasurer Tuttle moved that a copy of the resolution be transmitted to the representatives of the Society on United Engineering Society, which motion was seconded by Director Elwell, and carried by a vote of 4 to 1, Past-President Herschel voting in the negative.

"The Acting Secretary reported as a matter of information that he had conferred with Parker and Aaron regarding counsel fees incurred in connection with the work of the Committee on Referred Amendments, but that no definite reply had been received.

"The Acting Secretary referred to the appointment by President Davis of Messrs. H. S. Crocker, Robert Ridgway, George D. Snyder, F. A. Molitor and Lewis D. Rights as a Committee on Arrangements for the 1921 Annual Meeting, and stated that Col. Molitor had declined to serve, and expressed his fear that Mr. Rights also might not be able to serve.

"Action was taken giving the Committee authority to fill any vacancies in its membership caused by declinations.

* * * * *

"The Acting Secretary presented galley proofs of the Ballot for Officers for 1921, which, on motion of Past-President Herschel, seconded by Director Elwell, and duly carried, was approved as to form.

"Adjourned 6.20 P. M."

The Acting Secretary moved that these minutes be approved, and the action contained therein be made the action of the Board of Direction. This motion was seconded by Past-President Marx.

A discussion arose, participated in by Messrs. Grunsky, Herschel, Hoyt, Marx, Metcalf, Talbot and Tuttle, as to whether the action of the Executive Committee regarding the dissolution of Engineering Council could be construed as a reversal of the action of the Board of Direction on the same subject at its meeting of November 9th, 1920. Suggestion was made of qualified approval, but action was finally taken as follows:

Past-President Herschel moved as an amendment that the minutes are approved but they shall not be construed as creating a precedent for vote of the Executive Committee in opposition to vote of the Board passed previously. This amendment was seconded by Director Grunsky, and unanimously carried.

The original motion as amended was then put to vote and unanimously carried.

Past-President Talbot made a brief report of the last meeting of Engineering Council held in Washington, D. C., December 16th, 1921, and the Acting Secretary read a letter from Alfred D. Flinn, Secretary, reporting action taken.*

* See *Proceedings*, Am. Soc. C. E., January, 1921, pp. 7-8.

COMMITTEES ON EXTERNAL RELATIONS.

Reports* were presented from the Committee on External Relations and from the Committee of Past-Presidents, these Committees having been appointed by the Board of Direction at its meeting of November 9th, 1920, the former to consider and recommend to the Board its suggestions for determining and governing the external relations of this Society with other Engineering Societies, and the latter to review and transmit to the Board, with its recommendations, such report, and to give the Board the benefit of its advice on the whole subject.

Letters were read expressing the views of Messrs. Onward Bates, Hunter McDonald, and John A. Ockerson.

Treasurer Tuttle moved that the reports in question be referred to the incoming Board without recommendation. This motion was seconded by Past-President Marx, and discussed by Messrs. Cummings, Curtis, Metcalf, Pegram, Talbot, Tuttle, and Wall, following which it was carried by an "aye" and "no" vote.

Past-President Talbot moved that the Board report to the Annual Meeting its receipt of the two reports mentioned, and that it has under consideration plans whereby public and professional relations may be carried on. This motion was seconded by Treasurer Tuttle, and discussed by Messrs. Crocker, Davis, Herschel, Marx, Metcalf, Pegram, Talbot and Tuttle, and was carried by an "aye" and "no" vote.

Vice-President Metcalf moved:

"That this Board of Direction suggests to the incoming Board of Direction, in the light of the two reports just received (from the Committee of Corporate Members to Consider External Relations and from the Committee of Past-Presidents, appointed to review and transmit to the Board the former report) that it would be to the advantage of the Society to have the Board of Direction sit as a Committee of the whole on matters touching upon the external relations of the Society, at its Quarterly Meetings, and to appoint in such centers or districts, as may appear to it desirable, Local Committees to act under the Chairmanship of the member of the Board of Direction of the district upon these matters, in order that the work of the Committees and of the Society may be properly co-ordinated without undue expense to the Society."

This motion was seconded by Past-President Marx, and discussed by Messrs. Cummings, Fort, Metcalf, Stuart, Talbot, Tuttle and Wall, following which it was unanimously carried.

APPOINTMENT OF ENGINEER TO INTERSTATE COMMERCE COMMISSION.

Past-President Herschel presented a resolution authorizing the Committee appointed to take steps toward the appointment of an Engineer on the Interstate Commerce Commission to co-operate with the American Engineering Council and other societies in action toward the appointment of an Engineer on both the Shipping Board and the Interstate Commerce Commission.

This resolution was discussed by Messrs. Hoyt, Hudson, Ketchum and Stuart, and after being amended in detail, assumed the following form:

"Resolved: That the Special Committee appointed at the meeting of this Board of November 9th, 1920, to act in favor of the appointment of an Engineer on the Interstate Commerce Commission is hereby instructed to co-operate with American Engineering Council, or any other society, in this matter."

* See pages 181 and 185.

This resolution was unanimously adopted.

The Committee on Referred Amendments appointed by the meeting of the Board of Direction of August 12th, 1920, through the Acting Secretary, presented a progress report, with the request that it be continued.*

This report was discussed by Messrs. Crocker, Curtis, Henny, Hoyt, Ketchum, Talbot and Wall, and on motion, duly seconded, action was taken in its acceptance and the granting of the extension of time requested, with the understanding that the vacancy caused by the resignation of Mr. Franklin I. Fuller is to be filled by the Committee before proceeding further with its work.†

FINAL REPORT OF CONFERENCE COMMITTEE.

The Acting Secretary presented a letter of date of January 15th, 1921, from Richard L. Humphrey, Chairman of the Joint Conference Committee, transmitting a copy of the Conference Committee's final report in incomplete form, containing the following statements:

"The accounts of the Joint Conference Committee are not complete because of some unsettled accounts which it is expected will be adjusted during the coming week.

"Although approved by them, the members of the Committee have had no opportunity to go over this report in its final form together, and since it will be possible during the Annual Meeting of the Society to do this, the report will be signed and submitted with such modifications as may be desired at that time."

On motion of Director Hoyt, duly seconded and carried, the report was laid over for consideration at another session of the Board.

ENGINEERING SOCIETIES SERVICE BUREAU.

The Acting Secretary read the minutes of the final meeting of the Engineering Societies Service Bureau, held January 13th, 1921, as follows:

"A special meeting of the Directors of the Engineering Societies Service Bureau was held in the Board Room of Am. Inst. E. E. on Thursday, January 13th, 1921, at 11.30 A. M.; present, Messrs. Crocker, Am. Soc. C. E., Stoughton, Am. Inst. M. E., Rice, Am. Soc. M. E., and Hutchinson, Am. Inst. E. E.

"Voted: Not to return contributions received in response to circular letter sent out in September asking for funds to carry on work of Bureau.

"Voted: That United Engineering Society be authorized to reimburse the manager of Engineering Societies Service Bureau for the following expenditures made during the year from funds available for this service.

"Receipted bills on file with United Engineering Society.

"12 steel file cases at \$4.00.....	\$48.00
1 desk.....	72.50
Overtime work of assistant.....	145.50
Printing, stationery, etc.....	20.45
	<hr/>
	\$286.45

"Voted: To sell at cost all property of the Bureau, the proceeds of the sale and any surplus on hand to be distributed to the four Founder Societies. Unanimously carried.

"Voted: That upon the completion of the above work, this Board terminate its existence. (Col. Crocker present, but not voting.)

* See page 187.

† Subsequently the Committee filled the vacancy by the appointment of Mr. A. D. Butler, M. Am. Soc. C. E., of Spokane, Wash.

"*Voted*: That all records of the Bureau be left in charge of the manager and made available to the four Founder Societies and the Federated American Engineering Societies. Unanimously carried.

"*Voted*: To adjourn. Unanimously carried.

(Signed) "W. V. BROWN, *Manager*."

The Acting Secretary further explained that the other three Founder Societies having joined the Federated American Engineering Societies, their future employment service would be carried on under the auspices of the American Engineering Council, and that by courtesy this organization would temporarily, at least, receive applications from civil engineers, and would handle them as before, giving, however, preferred attention to the applications coming from members of the member societies of the Federated American Engineering Societies.

The question of employment service was discussed by Messrs. Cummings, Grunsky, Hudson, Stuart and Talbot, suggestion being made of several actions which might be taken in the premises. As a result of this consideration the following motion was made by Director Hudson, seconded by Vice-President Cummings, and unanimously carried:

"*Moved*: That it be recommended to the incoming Board that it give consideration to the question of providing some form of employment service to members of this Society."

REPORT ON COMPENSATION OF ENGINEERS.

The Acting Secretary presented a letter of date of January 13th, 1921, from Chairman Lansing H. Beach of the Committee to report on the Report of the Committee of Engineering Council on Classification and Compensation of Engineers, together with letters from Messrs. L. Jorgensen and Daniel W. Mead, members of the Committee, to Gen. Beach on the same subject of dates of December 7th and December 29th, 1920, respectively.

In view of Gen. Beach's statement "I do not believe, therefore, that anything further can be secured along the lines indicated, by the Committee, and would request that with the statement involved in these letters the Committee be released from further duty", action was taken by the Board in accepting Gen. Beach's letter of January 13th, 1921, as a final report and discharging the Committee.

Director Hoyt moved that the President be instructed to appoint a new committee of three members to report to the Board concerning matters of compensation of Engineers. This motion was duly seconded and unanimously carried.

The Acting Secretary presented the report of the Committee to Recommend the Award of Prizes.*

On motion of Past-President Marx, seconded by Director Fort, the report was accepted and approved by unanimous vote.

1921 ANNUAL CONVENTION.

Discussion was held as to the time and place for holding the Annual Convention for 1921, and on motion of Director Hoyt, seconded by Vice-President Crocker, it was decided to recommend to the incoming Board that the Annual Convention be held in Houston, Tex., April 26th, 1921.†

* See page 176.

† Subsequent action of the 1921 Board changed this date to April 27th, 1921.

On motion, consideration of a proposed scheme of mechanical classification of applications was laid over to the next meeting.

APPOINTMENTS AND COMMITTEES.

The Acting Secretary reported for the information of the Board the following:

(a).—The acceptance by John M. Goodell, Assoc. Am. Soc. C. E., of his appointment by the Board of Direction at its meeting of November 9th, 1920, as an additional member of the Special Committee on Highway Engineering.

(b).—Appointment by the President of a Committee consisting of Carleton Greene, Chairman, C. E. Holland, J. A. Bense, and E. J. Beugler to represent the Society at the opening ceremonies of the Town Hall, January 12th-18th, 1921.

(c).—The appointment by the President of the following Committee of Arrangements for the 1921 Annual Meeting: J. P. H. Perry, Chairman, Robert Ridgway, Ralph R. Rumery, George D. Snyder and H. S. Crocker.

THE ARTHUR M. WELLINGTON PRIZE.

The following proposal from the *Engineering News-Record* to establish under the auspices of the Society a Memorial to be known as the "Arthur M. Wellington Prize" was, on motion of Vice-President Stuart, seconded by Director Ketchum, unanimously accepted with the thanks of the Board to the donor:

"DECEMBER 15TH, 1920.

"TO THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN: For some time the staff of the *Engineering News-Record* has contemplated the establishment of a memorial in honor of Arthur M. Wellington, former editor of *Engineering News* and author of the well-known book on railway location entitled 'The Economic Theory of Railway Location'.

"After considering various proposals, we have concluded that no memorial could be more fitting than the establishment, under the auspices of the American Society of Civil Engineers, of an "Arthur M. Wellington Prize", to be awarded annually for the best paper presented before the Society on any phase of the science and art of transportation, whether by land, water or air.

"Accordingly, if it please the Board of Direction of the Society, the *Engineering News-Record* will be glad to establish a fund of \$2 000, the annual income from which would constitute the material element of the prize referred to in the preceding paragraph.

"The *Engineering News-Record* would make only two reservations regarding the award of the prize:

"1.—That it be awarded only for papers on a transportation subject. Such a reservation, we believe, befits a memorial to a great transportation authority.

"2.—That it be not restricted to members of the Society. This reservation is made because the great advances in transportation in the future may be on water or in the air, specialties in which the members of the Society do not normally engage.

"The usual discretion, of course, would be allowed the Society's Committee on Prizes to withhold the awarding of the prize in any year should they deem no paper offered to be worthy of the award. In that case the income should be added to the principal sum.

"Should the proposal herein contained meet with the approval of the Board of Direction, check in the amount designated will be promptly forwarded.

"Respectfully yours,

(Signed) "E. J. MEHREN, Editor."

Recessed at 5.20 P. M., to meet at 8 P. M., as a Membership Committee.

January 18th, 1921.—The Board re-convened at 12.30 P. M., at the conclusion of the meeting of the Membership Committee (the Membership Committee having recessed at 10.30 P. M., January 17th, 1921, to meet at 10.00 A. M., January 18th, 1921); President Davis in the chair; H. S. Crocker, Acting Secretary; and present, also, Messrs. Cummings, Curtis, Elwell, Fort, Greene, Grunsky, Henny, Herschel, Hoyt, Hudson, Ketchum, Marston, Marx, Metcalf, Pegram, Stuart, Talbot, Tuttle, Wagner, and Wall.

HIGHWAY ENGINEERING RESEARCH.

Vice-President Metcalf again brought up for consideration the detailed correspondence between the Committee on Special Committees and various engineers regarding the question of research in problems connected with road construction.

Treasurer Tuttle moved that the matter be referred to the Special Committee on Highway Engineering, with the request that it report back to the Board at its next meeting recommendations as to the procedure to be observed in order to make the Society of greater service to its membership and to the public in promoting this branch of engineering work.

This motion was seconded by Director Marston, discussed by Messrs. Cummings, Hudson, Marston, Metcalf, Stuart and Talbot, and carried.

On motion of Treasurer Tuttle, duly seconded and carried, the Publication Committee was requested to consider the advisability of publishing all, or selected portions, of correspondence accompanying the Report of the Committee on Special Committees hereinbefore referred to.

The Board recessed at 12.55 P. M., for luncheon.

AFTERNOON SESSION.

The Board re-convened at 2.15 P. M., with the same attendance as in the morning except Director Langthorn, who arrived at 3.10 P. M.

ORGANIZATION OF STUDENT CHAPTERS.

Director Marston reported the recommendations of the Committee appointed by the Board at its meeting of November 9th, 1920, to formulate rules governing the organization of Student Chapters.

These were discussed by Messrs. Curtis, Elwell, Henny, Hoyt, Hudson, Ketchum, Marx, Marston, Pegram, Stuart and Talbot, and after modification in some particulars, the report, on motion of Past-President Marx, seconded by Director Hudson, was unanimously adopted.*

Action was also taken in referring to the Publication Committee the question of special designs for emblems and letter-heads for the use of Student Chapters.

On motion of Director Hudson, the formation of a Student Chapter at Swarthmore College was approved subject to its compliance with the regulations in connection therewith.

On recommendation of the Committee, it was further decided that it would be inadvisable to hold a general meeting of representatives of Student Chapters at the present time.

On motion of Past-President Marx, seconded by Past-President Herschel, the Committee was discharged with the thanks of the Board.

* See page 266 of Announcements.

REPRESENTATIVES APPOINTED.

Action was taken in the appointment of Joseph J. Yates, M. Am. Soc. C. E., to succeed H. N. Latey, M. Am. Soc. C. E., as a representative of this Society on American Engineering Standards Committee for the term ending December 31st, 1923.

Further action was taken in granting mileage to the Society's representatives on the American Engineering Standards Committee, at the same rate as for members of Special Committees of the Society.

Arthur P. Davis, Past-President Am. Soc. C. E., was appointed representative of this Society to the United Engineering Society for a term of three years, to succeed Past-President Herschel, whose term expires January 27th, 1921. Mr. Davis was also appointed as one of the representatives of this Society on the John Fritz Medal Board of Award for a term of four years, expiring in January, 1925.

ADVISORY COMMITTEE ON CIVIL ENGINEERING.

In accordance with the action of the Board at its meeting of November 9th, 1920, in referring to a Committee to be composed of the Conference Committee on Research, the Committee on Special Committees, and the Acting Secretary, an invitation from the Division of Engineering of the National Research Council to appoint about fifteen members to an Advisory Committee on Civil Engineering, the Chairman of the Committee so appointed, Past-President Talbot, presented the following report:

"JANUARY 18TH, 1921.

"TO THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN: The Committee to which was referred the letter of date of October 7th, 1920, from Dr. C. A. Adams, Chairman of the Division of Engineering of the National Research Council, inviting the Society to become the Sponsor Society in research work in Civil Engineering and to appoint representatives on the Advisory Committee on Civil Engineering and to assume certain responsibilities therewith (see letter* of Dr. Adams and action of Board of Direction in Minutes of Meeting of November 7th, 1920), makes the following report:

"The Committee has given consideration to the project and to possible relations to research activities of the Society. It feels that research work in engineering should be promoted by the Society in such ways and to such extent as seem practicable for the Society to undertake. The proposal to co-operate with the National Research Council seems a promising method of stimulating and advancing engineering research. An acceptance of the invitation, however, should not be permitted to involve interference with the right or duty of the Society to advance or carry on research work on its own account or in co-operation with other societies or bodies. The Committee believes that the Society should maintain a cordial interest in stimulating and advancing the progress of engineering science and that it has a duty toward this side of engineering. With a view of safeguarding and stimulating this function of the Society and at the same time co-operating with the National Research Council, the Committee proposes the following:

"(a).—That a Committee on Research be appointed which shall consider and deal with matters of research which may be taken up by the Society and which shall make recommendations concerning research that in its judgment should be taken up by the Society—whether the research work be undertaken by the

* *Proceedings*, Am. Soc. C. E., December, 1920, p. 917.

Society, or be done in co-operation with other societies and committees, or be promoted or stimulated by the Society.

"(b).—That the Board of Direction accept the invitation of the Division of Engineering of the National Research Council to become the Sponsor Society in research work in civil engineering and to appoint representatives on the Advisory Committee on Civil Engineering of the National Research Council and to accept other responsibilities connected therewith.

"(c).—That the Committee on Research and the representatives of the Society on the Advisory Committee be not restricted to members of the Board of Direction, and that the element of reasonable continuity of membership be accepted as desirable.

"(d).—That a committee be appointed to report in greater detail on the scope and methods of work of these committees and to make recommendations on their personnel.

"Attention should be called to the statement in the letter of Dr. Adams that the proposed co-operation does not necessarily involve expense on the part of the Society, unless the Society concludes to pay the personal expenses of its representatives on the Advisory Committee in attendance at the meetings.

"Respectfully submitted,

(Signed) "A. N. TALBOT, *Chairman*,
"LEONARD METCALF,
"A. MARSTON,
"R. C. CUMMINGS,
"H. S. CROCKER."

On motion of Past-President Marx, seconded by Director Ketchum, this report was unanimously adopted.

REPRESENTATIVE ON ADVISORY BOARD ON HIGHWAY RESEARCH.

The Acting Secretary presented a letter to the Board of date of December 6th, 1920, from Alfred D. Flinn, Vice-Chairman of the National Research Council, which contains the following statements:

"On invitation, you informally participated in the Highway Research Conference held on November 11th, 1920. At this conference it was voted to organize an Advisory Board on Highway Research. The urgent need for such a body was outlined in the invitation and is embodied in the documents enclosed with this letter.

"Your attention is directed to the necessity for prompt action in completing the permanent organization of the Advisory Board. Every day of delay means a loss of thousands of dollars to the nation. We, therefore, urge you to appoint one representative and an alternate to represent your organization officially on the Advisory Board on Highway Research of the National Research Council."

On motion of Past-President Marx, seconded by Director Ketchum, Director Robert A. Cummings was appointed representative of this Society on the Advisory Board on Highway Research of the National Research Council, and Director J. S. Langthorn was designated as alternate.

REPRESENTATIVES ON STANDARDIZATION SECTIONS.

In response to a request contained in a letter dated January 10th, 1921, from Secretary Agnew of the American Engineering Standards Committee, S. F. Holtzman, M. Am. Soc. C. E., was appointed as the representative of this Society on the Sectional Committee for the Standardization of Elevators.

In response to a request contained in letters of October 28th, 1920, and January 8th, 1921, from E. S. Cogswell, General Manager, National Association of

Mutual Casualty Companies, action was taken in the appointment of G. R. Solomon, M. Am. Soc. C. E., as the representative of this Society on the Sectional Committee on Safety of Floor Openings, Railings and Toe Boards.

LOCAL SECTIONS AND STUDENT CHAPTERS.

Action was taken in revising the rules governing the organization and conduct of Local Sections to the following effect:

That amendments to a Constitution of a Local Section before becoming effective:

- (a).—Shall have been voted on by a majority of the whole membership of such Section.
- (b).—Shall have received an affirmative vote of not less than two-thirds of the members voting.
- (c).—Shall have received the approval of the Board of Direction of the Society, such approval being given either prior or subsequent to the action of the Section in its adoption, as the case may be.

The proposed Constitutions of the Northeastern Section, Central Ohio* Section, and Buffalo* Section were approved, and the organization of these Sections authorized, contingent upon each attaining a membership of at least 25 in its initial organization.

Action was taken in approving the Constitution of the proposed Nashville Section, contingent upon certain minor changes necessary to conform to the rules governing the organization of Sections.

The Acting Secretary presented, for the information of the Board, the first Annual Reports of the Stanford University and Drexel Institute Student Chapters.

SIX NEW STUDENT CHAPTERS AUTHORIZED.

Action was taken in authorizing the formation of the following Student Chapters: University of Kentucky, University of Washington, University of Texas, Rutgers College, University of Wisconsin, and State University of Iowa.

The Publication Committee was requested to report on the advisability of the issuance of a membership card to Junior members.

Adjourned at 5.20 P. M.

January 19th, 1921.—The Board met at 4 P. M., at the Headquarters of the Society, 33 West 39th Street, New York City, at the time of the Annual Meeting; President Webster in the chair; and present, also, Messrs. Anderson, Beahan, Clark, Curtis, Darrow, Davis, Elwell, Greene, Grunsky, Herschel, Hogan, Hovey, Hoyt, Hudson, Humphrey, Langthorn, Marston, O'Connor, Pegram, Stuart, Talbot, and Wall.

Director Marston was appointed Secretary *pro tem*.

After discussion of the programme of work in hand, recess was taken until 10 A. M., January 20th, 1921.

January 20th, 1921.—The Board re-convened at 10 A. M.; President Webster in the chair; Director Marston, Secretary *pro tem*; and present, also, Messrs. Anderson, Beahan, Clark, Cummings, Curtis, Darrow, Davis, Greene, Grunsky,

* Organization completed.

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Henny, Herschel, Hogan, Hovey, Hoyt, Hudson, Humphrey, Pegram, Stuart, Talbot and Wall.

On motion of Past-President Curtis, seconded by Director Beahan, the salary for the Secretary of the Society for the coming year was fixed at \$10 000.

This motion was unanimously carried.

ACTION REGARDING NEW SECRETARY.

Action was taken in the appointment of a Committee consisting of the President and of the Past-Presidents who are members of the Board to investigate the question of available candidates for Secretary, and to report at a later session of this meeting of the Board; an informal ballot was also authorized for the guidance of the Committee.

Director Marston moved that Herbert S. Crocker be continued as Acting Secretary at his present rate of salary until further action by the Board.

This motion was seconded by Treasurer Hovey, and was carried unanimously.

This action was followed by tentative suggestions of various candidates for the position of Secretary of the Society, but no further action was taken.

The Acting Secretary came in at 11.05 A. M.

Consideration was had of the Budget for the year 1921, as recommended at the meeting of the Board of Direction of January 17th, 1921.

Past-President Curtis moved its adoption, this motion being seconded by Past-President Herschel.

After general discussion of the financial needs of the Special Committees, participated in by Messrs. Cummings, Curtis, Hoyt, Hudson, Humphrey, Stuart and Talbot, the motion was carried by unanimous vote.

On motion of Past-President Davis, seconded by Vice-President Wall, the President was authorized to select and nominate for appointment by the Board the personnel of the Standing Committees.

1921 ANNUAL CONVENTION.

The Acting Secretary reported the action of the Board at its meeting of January 18th, 1921, in recommendation that the Annual Convention for 1921 be held at Houston, Tex., on April 26th, 1921, and after discussion by Messrs. Anderson, Curtis, Davis, Henny, Hogan, Hoyt, Humphrey and Talbot, Director Henny moved that the Annual Convention for 1921 be held in Houston, Tex., beginning April 27th, 1921.

This motion was seconded by Past-President Davis, and was carried unanimously.

NEXT MEETING OF BOARD.

Director Humphrey moved that when the Board recess, it shall recess until Monday, March 7th, 1921.

This motion was seconded by Past-President Davis and unanimously carried.

REPRESENTATIVES ON ENGINEERING FOUNDATION.

Action was taken in the re-appointment for another term ending in February, 1924, of Silas H. Woodard, M. Am. Soc. C. E., as a representative of this Society on Engineering Foundation, and in the appointment of E. D. Adams, F. Am.

Soc. C. E., as successor to J. Waldo Smith, M. Am. Soc. C. E., as a representative of this Society on Engineering Foundation for the term ending in February, 1924.

The Acting Secretary referred to the appointment by the Board of Direction on November 9th, 1920, of Messrs. Charles Hansel, James L. Tighe, Edward H. Lee, Charles S. Churchill, and Samuel Murray, as a Committee to co-operate with similar committees of other Engineering Societies, and of American Engineering Council, in such action as may properly be taken to secure the appointment of an Engineer on the Interstate Commerce Commission, and explained that although Mr. Hansel's name appeared first in the list he hesitated to assume the duties of the Chairmanship, and for that reason had called no meeting.

On motion of Director Humphrey, seconded by Director Beahan and unanimously carried, Mr. Hansel was designated as Chairman of this Committee.

Consideration was had of the "advisability of appointing a Committee to investigate the question of Electrification of Steam Railroads", with especial reference to a report* of the Committee on Special Committees, which report had been submitted to the meeting of the Board of Direction held on January 17th, 1921, and by that meeting referred to the incoming Board.

On motion of Director Humphrey, seconded by Director Marston, this matter was laid over for consideration on March 7th, 1921, the Acting Secretary being instructed to send copies of the report to each member of the Board.

On motion of Director Marston, seconded and carried unanimously, the Acting Secretary was authorized to pay mileage to the members of the Special Committee on Bridge Design and Construction covering their attendance at its meeting of December 13th, 1920.

ACTION ON EXTERNAL RELATIONS POSTPONED.

The Acting Secretary presented for consideration the resolution† adopted by the Board of Direction at its meeting of January 17th, 1921, in regard to the reports of the Committee on External Relations and the Committee of Past-Presidents.

On motion of Director Humphrey, seconded by Vice-President Stuart and unanimously carried, consideration of this matter was postponed until March 7th, 1921.

At 1 P. M., recess was taken until 4 P. M.

AFTERNOON SESSION.

The Board re-convened at 4.25 P. M.

President Webster presented his selection of the personnel of the Standing Committees of the Board, and the following were appointed:

STANDING COMMITTEES.

On Finance:

Clemens Herschel, *Chairman*,
Willard Beahan,
John W. Alvord,
J. S. Langthorn,
Ira W. McConnell.

On Publications:

Andrew M. Hunt, *Chairman*,
Charles C. Elwell,
C. E. Grunsky,
Clarence W. Hudson,
Richard L. Humphrey.

* See page 157.

† See page 163.

On Library:

Francis Lee Stuart, *Chairman*,
Robert A. Cummings,
Carleton Greene,
George G. Anderson,

On Special Committees:

Arthur P. Davis, *Chairman*,
George H. Pegram,
Anson Marston,
The Secretary.

STUDENT CHAPTER AUTHORIZED.

A petition was received from the Student Society of Civil Engineers of the University of Pittsburgh for the formation of a Student Chapter at that Institution, the same being accompanied by copy of its Constitution and By-laws.

On motion, duly seconded and carried, the petition was granted and the organization of the Student Chapter of the University of Pittsburgh was duly authorized.

The Acting Secretary presented the following letter which he had addressed to the Board, and withdrew pending its consideration:

"TO THE BOARD OF DIRECTION,

"JANUARY 20TH, 1921.

AMERICAN SOCIETY CIVIL ENGINEERS.

"GENTLEMEN: I refer to your action of this date in appointing me Acting Secretary for the interim necessary to elect a Secretary of the Society, and I would call your attention to the fact that since January 28th, 1920, I have served the Society in this way at some personal sacrifice, which I do not need to discuss.

"The continuation of this temporary work comes at a season of the year when I should be making arrangements to readjust my business affairs with a view to the resumption of my engineering practice. Under these circumstances I feel that I can only accept this temporary appointment with the provision that I shall be permitted to devote a portion of my time, at my discretion, to my personal affairs, it being understood that any advantage which I might take of such permission would not involve any arrangement which would be detrimental to the work of the Society or the conduct of this office."

The Acting Secretary returned.

On motion of Director Humphrey, seconded by Director Marston, the letter of the Acting Secretary was unanimously approved.

ADVISORY COMMITTEE ON CIVIL ENGINEERING.

Past-President Talbot discussed the report* submitted to the Board at its meeting of January 18th, 1921, and the Committee appointed at the meeting of the Board on November 9th, 1920, to consider an invitation from the Division of Engineering of the National Research Council to appoint about fifteen members to its Advisory Committee on Civil Engineering, and suggested that considerable work still remains to be done in appointments and recommendations of activities.

He moved that the whole matter be referred to a committee to be appointed by the President with a view to its reporting March 7th, 1921. This motion was seconded by Vice-President Cummings, discussed by Messrs. Marston, Stuart and Talbot, and was amended to read that the matter be again referred to the original committee which was instructed to make a written report for consideration of the Board on the date mentioned.†

* See pages 158 and 167.

† The change in personnel of the Standing Committees results automatically in the formation of a Committee composed of the following to consider this subject: A. N. Talbot, Chairman, Robert A. Cummings, Henry B. Seaman, A. P. Davis, Anson Marston, George H. Pegram and H. S. Crocker.

EMPLOYMENT SERVICE.

Director Hoyt referred to the following action of the Board of Direction at its meeting of January 18th, 1921:

"*Moved*: That it be recommended to the incoming Board that it give consideration to the question of providing some form of employment service to members of this Society."

in view of which he offered the following motion, which was seconded and unanimously carried:

"That the Acting Secretary be instructed to give publicity in *Proceedings* to the fact that for the time being members of the Society may file applications for employment with the Secretary of the Society, who will handle them either independently or by means of the existing Employment Service of American Engineering Council, as he may arrange."

On motion of Director Hoyt, seconded by Vice-President Cummings, the Committee on Re-districting, appointed at the meeting of the Board on June 1st, 1920, was discharged.

On motion of Director Humphrey, seconded by Vice-President Cummings and unanimously carried, the President was empowered to appoint a Committee of the Board of Direction, and a Local Committee of Arrangements for the 1921 Annual Convention.

President Webster subsequently appointed as a Committee of the Board Messrs. George G. Anderson, Chairman, Edward E. Wall and Frank T. Darrow, and as Chairman of the Local Committee, Mr. E. B. Cushing, the latter with power to complete the Committee.

Action was taken in allowing to members of the Executive Committee, for attendance at its meetings, mileage at the rate paid for attendance at meetings of the Board.

Recess was taken in accordance with previous action until March 7th, 1921.

REPORT IN FULL OF THE SIXTY-EIGHTH ANNUAL MEETING,
JANUARY 19TH AND 20TH, 1921

Wednesday, January 19th, 1921 (10 A. M.)—The Sixty-eighth Annual Meeting was called to order in the Auditorium of the Engineering Societies Building, 33 West 39th Street, New York City; President Arthur P. Davis, in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 710 members.

THE PRESIDENT.—The Annual Meeting is now convened. The first business is the canvassing of the ballot in the election that is now pending. Under the Constitution that canvassing could not begin before this meeting was called to order, because the Constitution requires that each member may have the privilege of changing his vote up to the time of the closing of the ballot at 9 o'clock this morning. The Committee could not begin work at 9 o'clock since its appointment by the presiding officer of the Annual Meeting is required by the Constitution. The first duty of the Chair is, therefore, to appoint the Tellers to canvass the Ballot for Officers.

(After preliminary announcements and a call for volunteers from the floor, the following were designated as Tellers:

F. B. Church, *Chairman*; C. S. Bilyeu, A. W. Carpenter, Clement E. Chase, W. T. Chevalier, W. H. Chorlton, C. E. Conover, B. L. Cushing, R. de Charms, Jr., Irving Demarest, H. S. Devlin, B. C. Donham, W. A. E. Doying, Boyd Ehle, Torris Eide, A. C. Everham, J. F. Fairchild, S. E. Fairchild, Jr., Felder Furlow, R. R. Graham, W. G. Grove, N. C. Grover, H. P. Hammond, George P. Janes, J. M. Johnson, C. A. McCullough, A. B. McGrew, F. R. McMillan, David Meriwether, Jr., F. H. Newell, C. W. Ogden, George Paaswell, George Perrine, B. B. Priest, P. J. Reich, Samuel I. Sacks, J. A. Sargent, L. H. Shoemaker, F. L. Stearns, J. S. Swindells, A. Travers-Ewell, H. S. Van Scoyoc, J. E. Wadsworth, J. J. Walker, and T. S. Williams.)

The unusual number of Tellers is due to the great amount of work connected with the counting of the ballot, which will be done on the Fifteenth Floor. The Tellers will please report immediately to the Chairman, Mr. F. B. Church, on the Fifteenth Floor.

The next order of business is the report of the Board of Direction, which is in the hands of Acting Secretary, and has been approved by the Board.

THE ACTING SECRETARY.—The Annual Report of the Board of Direction for the year ending December 31st, 1920, has been printed and distributed to the members. Inasmuch as you all have copies, to save time I shall only call attention to a few points. The tabulation of membership shows a net increase during the year of 499. This net increase is determined by the total number of new members admitted, less those dropped for non-payment of dues, those who have resigned, and the deceased members. Incidentally, the number of new members, 861, admitted this year is greater than in any previous year. A great many were dropped on account of non-payment of dues. The losses by death during the year number 91, as listed in the report.

(The Acting Secretary presented the Reports* of the Board of Direction, of the Secretary, and of the Treasurer, which were accepted.)

* See pages 275 to 286.

REPORT OF COMMITTEE ON PRIZES.

THE PRESIDENT.—The report of the Committee to Recommend the Award of Prizes and the action of the Board of Direction in relation thereto is next in order.

THE ACTING SECRETARY.—This report is dated December 30th, 1920, and is signed by Messrs. W. H. Hoyt, Joseph Jacobs, and Morris R. Sherrerd, Chairman. Upon the recommendation of this Committee, the Board of Direction has awarded the medals and prizes for the year ending July, 1920, as follows:

THE NORMAN MEDAL to Paper No. 1426, "The Economics of Steel Arch Bridges", by J. A. L. Waddell, M. Am. Soc. C. E.

THE J. JAMES R. CROES MEDAL to Paper No. 1461, "Arched Dams", by B. A. Smith, M. Am. Soc. C. E.

THE THOMAS FITCH ROWLAND PRIZE to Paper No. 1460, "Revision of the Niagara Railway Arch Bridge", by Charles Evan Fowler, M. Am. Soc. C. E.

THE JAMES LAURIE PRIZE to Paper No. 1435, "Water Supply for the Camps, Cantonments, and Other Projects Built by the Construction Division of the United States Army", by Dabney H. Maury, M. Am. Soc. C. E.

THE COLLINGWOOD PRIZE FOR JUNIORS to Paper No. 1427, "Verification of the Bazin Weir Formula by Hydro-Chemical Gaugings", by Floyd A. Nagler, Jun. Am. Soc. C. E.*

ELECTION OF MEMBERS OF NOMINATING COMMITTEE.

THE PRESIDENT.—The next business is the election of members of the Nominating Committee. Suggestions for members of this Committee have been canvassed, and the Acting Secretary will please read the result.

The Acting Secretary presented the report of the Tellers, which follows:

"JANUARY 15TH, 1921.

"TO THE BOARD OF DIRECTION:

"The undersigned Tellers report the result of canvass of final suggestions for members of the Nominating Committee in the several districts, as follows:

"District No. 1.—W. T. Chevalier.....	254
W. A. Howell.....	38
S. J. Ott.....	26
Scattering	32
Total.....	350

"District No. 3.—A. L. Johnson.....	38
C. A. Poole.....	35
E. A. Fisher.....	11
Scattering	10
Total	94

"District No. 5.—J. H. Van Wagenen.....	100
H. H. Rousseau.....	31
R. C. Marshall, Jr.....	26
Scattering	26
Total	183

* Mr. Nagler was elected an Associate Member of the Society, on May 13th, 1918, after this paper was written.

"District No. 6.—G. H. Tinker.....	95
R. N. Begien.....	56
W. P. Brown.....	24
Scattering	6

Total 181

"District No. 10.—F. E. Weymouth.....	61
F. T. Darrow.....	24
R. C. Gemmell.....	18
Scattering	39

Total 142

"District No. 11.—J. H. Brillhart.....	90
G. G. Anderson.....	27
J. C. Nagle.....	16
Scattering	8

Total 141

"District No. 13.—Thomas H. Means.....	96
G. L. Dillman.....	37
H. L. Haehl.....	23
Scattering	5

Total 161

"Respectfully submitted,

"GEORGE HALLETT CLARK,

"CARLETON GREENE,

"J. S. LANGTHORN,

"*Tellers.*"

The Districts were taken up separately, and by vote of the meeting the following members of the Nominating Committee were appointed to serve for two years:

W. T. Chevalier.....	Representing District No.	1
A. L. Johnson.....	" "	3
J. H. Van Wagenen.....	" "	5
G. H. Tinker.....	" "	6
F. E. Weymouth.....	" "	10
J. H. Brillhart.....	" "	11
Thomas H. Means.....	" "	13

PROGRESS REPORT OF THE COMMITTEE ON SOILS FOR FOUNDATIONS, ETC.

THE PRESIDENT.—The report of the Special Committee to Codify Present Practice on the Bearing Value of Soils for Foundations, etc., Robert A. Cummings, Chairman, is next in order of business. Is Mr. Cummings present?

ROBERT A. CUMMINGS, M. AM. SOC. C. E.—Mr. President and Fellow Members of the Society: Your Committee is still active, and presents the following report.*

With your approval, the Committee will continue its work during the coming year, and I move that its report be accepted.

(Motion duly seconded.)

* See page 9 of Papers and Discussions.

THE PRESIDENT.—It is moved that the report be accepted.

FAYETTE S. CURTIS, PAST-PRESIDENT, AM. SOC. C. E.—And the Committee continued.

THE PRESIDENT.—With the consent of the mover that will be added. Those in favor of the motion please signify by saying "aye"; contrary "no". The "ayes" have it, and the motion is carried.

The next order of business is the report of the Special Committee to Report on Stresses in Railroad Track, Arthur N. Talbot, Chairman. The progress report of this Committee has been published.*

ARTHUR N. TALBOT, PAST-PRESIDENT, AM. SOC. C. E.—The Committee presented a rather elaborate report a year ago, and has only a brief progress report to make at this time.

(Reads report as published.)

This work is being carried on by several men giving their entire time to it, and the Committee is continuing on other phases of the subject assigned. Mr. President, I move that the report be accepted and the Committee continued.

(Motion duly seconded.)

THE PRESIDENT.—It is moved and seconded that this report be accepted and the Committee continued. Are you ready for the question? Those in favor of the motion please signify by saying "aye"; contrary, "no". The report is accepted.

The next order of business is the report of the Special Committee on Highway Engineering, H. Eltinge Breed, Chairman.

THE ACTING SECRETARY.—This report came in this morning by mail, and is as follows:

PROGRESS REPORT OF THE SPECIAL COMMITTEE ON HIGHWAY ENGINEERING.

"The important features of the development of Federal highway work are embodied in *Circular No. 65* of the United States Department of Agriculture, pages 17-23. These pages include the original Act of 1916, and the amendment of February, 1919. The bulletin is submitted herewith, and the following is a brief resumé of the most important parts of the law and the amendment.

"The original Act contemplated the co-operation between the Secretary of Agriculture and the States through their respective Highway Departments in the construction of 'rural post roads.' For this purpose the original bill carried an appropriation as follows:

"For the fiscal year ending June 30th, 1917.....	\$5 000 000
" " " " " " " " , 1918.....	10 000 000
" " " " " " " " , 1919.....	15 000 000
" " " " " " " " , 1920.....	20 000 000
" " " " " " " " , 1921.....	25 000 000

"No payment of Federal Aid moneys could be made in excess of \$10 000 per mile. Work was to be done under the direct supervision of the State Highway Departments, subject to the inspection and approval of Secretary of Agriculture. Maintenance was to be done by the States. There was also an appropriation of \$10 000 000 for the survey, construction, and maintenance of roads and trails within or partly within the National forests.

"The original act was amended so as to embrace the following important features: By amplification, the designation 'rural post roads' was made to include a road which forms a connecting link not to exceed ten miles in length. The amount

* *Proceedings*, Am. Soc. C. E., December, 1920, p. 916.

of Federal Aid was increased from \$10 000 to \$20 000 per mile. The amendment appropriated the following additional sums for Federal Aid purposes:

"For the fiscal year ending June 30th, 1919.....	\$50 000 000
" " " " " " " , 1920.....	75 000 000
" " " " " " " , 1921.....	75 000 000

"The Secretary of War was to transfer all road building material not needed to the Secretary of Agriculture, to be distributed to the several States. The discretionary reservation of 10% of such material for use of forest roads was provided. There was made also an appropriation of \$9 000 000 to be used with or without the co-operation of the States for forest roads.

"At the last session of Congress there was brought up for discussion the Townsend Bill or 'The National Highway Act', the purpose of which is to provide for the establishment and maintenance of a National highway system, to create a Federal Highway Commission, etc., that shall be independent of the Department of Agriculture. The most important features of the bill are the creation of a Federal Highway Commission of five Commissioners at an annual salary of \$10 000. This commission shall have full powers to establish, construct, maintain, improve, and regulate a National system of highways. Only such durable types of surface and kinds of material shall be adopted as will adequately meet the existing and probable future traffic needs, with the general provision for at least a 66-ft. right of way, and a width of surface of not less than 20 ft.

"This Act provided also that all powers and duties relating to highways or public roads held by the Secretary of Agriculture, together with the personnel equipment, documents, etc., be transferred to the Commission, making all appropriations continue in force and effect under the Commission. It provided also for the taking over of all the duties of the Council of National Defense. The Act provided for an appropriation of \$425 000 000.

"It is significant that on December 11th, 1919, the American Association of State Highway Officials passed a resolution virtually endorsing the present Bureau of Public Roads. The resolution reads:

"*Now, Therefore, be it Resolved:* By the American Association of State Highway Officials, in convention assembled at Louisville, Kentucky, on December 11th, 1919:

"1.—That we urge the continuance of Federal co-operation with the States in the building of roads under the terms of existing law and under the direction of present agencies. To this end we recommend and urge that Congress appropriate the following sums:

"For the fiscal year ending June 30th, 1921.....	\$100 000 000
" " " " " " " , 1922.....	100 000 000
" " " " " " " , 1923.....	100 000 000
" " " " " " " , 1924.....	100 000 000

"2.—That all of said appropriation allotted to the several States shall be available for said States until one year after the expiration of the last appropriation.

"3.—That we favor an adequate National highway system upon which the Federal aid funds will be concentrated. This system shall be selected by the various States in co-operation with the Bureau of Public Roads, and connected at the State lines by the Federal department in cases where connections are not made by the adjoining States.

"4.—Realizing that the improvement of a system of National highways will be brought about in much shorter time through the co-operation of the Federal Government and the States, under the plan proposed by this resolution, we favor the passage at this time of only such appropriations as will insure the continuation of the Federal aid as provided for in this resolution.

"5.—That a copy of this statement be sent to each member of Congress."

"And on December 15th, 1920, Committees from the State Highway Officials Association appeared before the Congressional Committee in formal argument, urging Congress to enact the Federal aid legislation, and also passed a resolution for the continuance of Federal aid on the basis of present legislation, with certain modifications.

"When the National Highway Act is reintroduced, the American Society of Civil Engineers may wish to become actively interested in its passage, either favorably or adversely. Two amendments to the present law are undoubtedly needed:

"1.—An increase over \$20 000 per mile, the present Federal aid share, to one-half of the total expenditure. This is justified by difficult and costly grading projects as well as by roads carrying heavy traffic, which require greater widths of surfacing than 20 ft.

"2.—The provision of larger appropriations for roads through public lands and in forest areas that will be parts of a National system and which on account of large mileage would be a greater burden than some States should bear.

"Beyond this, the Committee, without power to take action and reluctant to commit the Society as a whole in any way, has no definite recommendations to make. In the absence of external developments it awaits further instructions from the Society.

"Respectfully submitted,

"THE SPECIAL COMMITTEE ON HIGHWAY ENGINEERING,

"By H. ELTINGE BREED,

"Chairman."

THE PRESIDENT.—What shall be done with this report?

C. W. HUDSON, M. Am. Soc. C. E.—I move that it be received and the Committee continued.*

(Motion duly seconded and carried.)

REPORT ON WORK OF THE SPECIAL COMMITTEE ON BRIDGES.

THE PRESIDENT.—The next order of business is the report from the Special Committee to Consider and Recommend for Adoption a Specification for Bridge Design and Construction, Henry B. Seaman, Chairman. This Committee has only recently been appointed, but we would like to hear from Mr. Seaman in regard to any progress that has been made. Is Mr. Seaman present? Mr. Hudson can you give us any information as to the activities of this Committee?

MR. HUDSON.—We have had one meeting, Mr. President, and the general subject has been divided into questions of foundations, the principles of specifications covering concrete bridges and railway bridges, we have written our ideas of the points to be covered in the different specifications and communicated them to the Chairman. We will have a meeting to-morrow. The Committee has organized and elected Mr. Seaman as Chairman, and Howard C. Baird, as Secretary, but we have done practically no work as yet.

THE PRESIDENT.—What shall be done with this report?

MR. HUDSON.—I move that the Committee be continued.

(Motion duly seconded and carried.)

REPORT ON WORK OF THE ALFRED NOBLE MEMORIAL COMMITTEE.

THE PRESIDENT.—The next on the programme is a report from the Alfred Noble Memorial Committee, Onward Bates, Chairman. Is Mr. Bates present? Is any

other member of that Committee present who can report progress? Does any one know whether a report has been prepared?

C. E. GRUNSKY, M. AM. SOC. C. E.—Mr. President, I may say that I saw Mr. Bates only a few days ago, and he told me of the great interest that the Committee is taking in this matter, and that it is making progress. The Committee has been meeting with considerable difficulty, and there have been delays that were unavoidable, but I know from what Mr. Bates has said that the members of the Committee are extremely interested in their work, and I move that the Committee be continued.

(Motion duly seconded and carried.)

THE PRESIDENT.—The Board of Direction recently took action in the appointment of certain Committees regarding external relations. It has received reports from those Committees, and has designated Vice-President Leonard Metcalf to report the action of the Board on this subject. The Chair will now recognize Vice-President Metcalf for that purpose.

LEONARD METCALF, M. AM. SOC. C. E.—Mr. President and Gentlemen: Following the action of the Society in the rejection of certain amendments to the Constitution which had been outlined by the Board of Direction to make effective the recommendations of the Development Committee, the Board felt that it did not want to drop the matter at that point. It did not interpret the rejection of those amendments as being in opposition to the enlargement of the external relations of the Society, which had been previously approved by a direct vote, but rather as dissent from the method of bringing about the desired change which had been set up by the Board.

The Board thereupon passed certain resolutions and appointed two Committees. The report of the Committee on External Relations, of which R. C. Marshall, Jr., M. Am. Soc. C. E., is Chairman, is as follows:

REPORT OF THE COMMITTEE ON EXTERNAL RELATIONS.

"NEW YORK, DECEMBER 31ST, 1920.

"TO THE BOARD OF DIRECTION,

"AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN.—Your Committee on External Relations met in the Past-Presidents' Room, American Society of Civil Engineers, Engineering Societies Building, 33 West 39th Street, New York City, at 10 A. M., December 30th, 1920, pursuant to a resolution of the Board of Direction of the American Society of Civil Engineers, adopted at the meeting of November 9th and 10th, 1920, as follows:

"Whereas, The American Society of Civil Engineers has voted not to become a Charter Member of the Federated American Engineering Societies, and

"Whereas, In the Questionnaire of April 14th, 1920, the Society approved the idea to 'actively co-operate with other engineering and allied technical associations in promoting the welfare of the Engineering Profession';

"Resolved: That the following Committee of Corporate Members of the Society not members of the Board of Direction be appointed to consider and make recommendations to the Board on or before January 1st, 1921, of its suggestions for determining and governing the external relations of this Society with other engineering societies.

	District No.		District No.
"W. T. Chevalier.....	1	J. H. Dunlap.....	7
George A. Johnson.....	1	W. D. Gerber.....	8
Ralph W. Horne.....	2	W. J. Burton.....	9
Charles A. Poole.....	3	John S. Means.....	10
Edgar M. Hoopes, Jr.....	4	S. B. Morris.....	11
R. C. Marshall, Jr., <i>Chairman</i> ..	5	Fred. M. Randlett.....	12
Kenneth C. Grant.....	6	C. H. Snyder.....	13

"There were present R. C. Marshall, Jr., Chairman, and Messrs. W. T. Chevalier, George A. Johnson, Ralph W. Horne, Charles A. Poole, Kenneth C. Grant, J. H. Dunlap, W. D. Gerber, W. J. Burton, John S. Means, S. B. Morris, Fred M. Randlett, C. H. Snyder.

"Upon convening, the Committee elected W. T. Chevalier to act as Secretary.

"The Committee had before it, and took into consideration during its deliberations, the following documents:

"A.—Brief history of the Committee on Development and its successor, the Joint Conference Committee, and the results of their activities.

"B.—Pamphlet dated September 14th, 1918, containing (a) preamble and resolutions adopted by the Board of Direction June 18th, 1918, creating the Committee on Development; (b) precept of the then President Arthur N. Talbot; (c) list of members of the Committee on Development.

"C.—Preliminary report of the Committee on Development dated November 16th, 1918, containing rules, tentative outline of Committee's work, and personnel of committees, etc.

"D.—Second Progress Report of the Committee on Development presented to the Board of Direction, June 17th, 1919, and issued to the membership June 27th, 1919.

"E.—Final Report of the Committee on Development presented to the Board of Direction October 14th, 1919, to which is appended the Report of the Sub-Committee on Budget dated November 11th, 1919, and issued to the membership November 15th, 1919.

"F.—Minutes of the Annual Meeting of 1920.

"G.—Report of the Special Committee of the Board of Direction to study the Report of the Committee on Development presented to the Board January 19th, 1920.

"H.—Questionnaire canvassed April 14th, 1920.

"I.—Proposed Amendments to the Constitution dated June 23d, 1920.

"J.—First Progress Report of the Committee on Referred Amendments dated November 2d, 1920.

"K.—Proposed Amendments ballot canvassed October 6th, 1920.

"L.—Constitution and By-Laws of the Federated American Engineering Societies.

"M.—Letter of transmittal of Questionnaire, legal opinion, 'Arguments For' and 'Arguments Against' Proposed Membership in Federated American Engineering Societies.

"In view of the possibility of misunderstanding as to the significance of the terms 'welfare' and 'external relations' due to their use in various connections in recent reports on the activities of the Society, it was deemed advisable that these terms should be defined for the purposes of this report.

"Upon motion, duly seconded and unanimously carried, a sub-committee was appointed to consider and report on this subject. The Committee consisted of Messrs. Johnson, Burton, and Poole, who, after deliberation, reported as follows:

"The Board of Direction, by resolution adopted November 10th, 1920, instructed this Committee 'to make suggestions for determining and governing the external relations of this Society with other engineering societies', in view of the fact that by approval of the idea embodied in the Questionnaire of April 14th,

1920, 'to actively co-operate with other engineering and allied technical organizations in promoting the welfare of the Engineering Profession', and the negative vote on the proposition of the American Society of Civil Engineers becoming a Charter Member of the Federated American Engineering Societies.

"In this report your Committee defines the term 'welfare of the Engineering Profession' in the very broadest sense as applied to the external relationship of the American Society of Civil Engineers with all other strictly technical and semi-technical associations in matters affecting the Profession of Engineering and the best interests of the public at large in any wise materially associated therewith.

"In consequence, this definition adopted by your Committee includes the relation of the Society to other National societies and related organizations with respect to co-operation and administration of technical activities and public affairs.

"Your Sub-Committee further suggests that the above definition has not necessarily been generally recognized, and it believes it to be in the interest of all that the word 'welfare' be eliminated in the discussion of the subject."

"Upon motion, duly seconded, the above report was unanimously adopted.

"Upon motion, duly seconded, and unanimously carried, the Chairman then appointed a sub-committee consisting of Messrs. Randlett, Means, and Horne to consider and report on the subjects that might properly be considered as relating to public affairs, and a sub-committee consisting of Messrs. Snyder, Dunlap, and Morris to consider and report on the subjects that might properly be considered as included in the technical activities previously referred to.

"The Committee received the reports of the Sub-Committee on determination of the subjects included under the head of public affairs and under the head of technical activities. After discussion these heads were consolidated into one list of subjects that might properly be included within the domain of external relations of the Society, as follows:

- 1.—Engineering Education.
- 2.—Conservation of National Resources.
- 3.—Standards.
- 4.—Research.
- 5.—Industrial Efficiency.
- 6.—Licensing and Registration.
- 7.—Publicity.
- 8.—Classification and Compensation.
- 9.—General Employment Bureau for Co-operation with Local Societies.
- 10.—Arbitration and Expert Testimony.
- 11.—Legislation.
- 12.—Joint Meetings.

"These heads were considered to cover the essential fields as outlined and defined in the report of the Committee on Development to the Board of Direction of October, 1919.

"Thereupon ensued a general discussion on the scope and purpose of the Committee's work, and it was decided that the precept of the Board of Direction should be interpreted as directing the Committee to consider that the Society had voted not to become a Charter Member of the Federated American Engineering Societies, and that it should consider and make recommendations to the Board of its suggestions for determining and governing the external relations of the Society with other engineering societies by methods that do not involve membership in that Federation.

"During the discussion the following points were brought out:

"4.—It was the sense of the Committee that co-operation of the American Society of Civil Engineers with other organizations should be accomplished in such manner that it shall not involve the surrender of the name and standing of the Society into outside hands, or in any way permit the use of the Society's name in behalf of any cause of which it does not approve.

"B.—It was further agreed by the Committee that the question of membership in the Federated American Engineering Societies was not within the scope of its assignment from the Board of Direction, although this matter received considerable discussion *pro* and *con*.

"C.—The question was discussed as to whether the Society should include among the subjects to be considered under 'External Relations' that of compensation of engineers. This subject was included after considerable debate, with the understanding that it did not contemplate the establishment of standard schedules of compensation or efforts to make such schedules directly effective, but did contemplate the assembling and analysis of data and the preparation of such tentative schedules of this nature as might be found advisable in special cases from time to time.

"D.—The subject of industrial efficiency was debated at considerable length, and was included with the understanding that it had in view the field of general industrial efficiency, where engineers might make valuable contributions to the subject, but did not include the consideration of questions that might arise between employers and employees, whereby the Society might find itself in the position of a partisan, political or otherwise.

"The Committee views with favor the statement recently made by Herbert C. Hoover, M. Am. Soc. C. E., President of the Federated American Engineering Societies, that the trend of thought among engineers everywhere was towards federation by territorial organization as distinguished from National organization. The Committee believes that such territorial organization would foster the greater community of interest necessary to do effective work in the field of public relations, and believes further that such organization for work of this sort will enable more effective co-operation by the American Society of Civil Engineers with other engineering bodies.

"When the discussion reached a point at which was foreshadowed the recommendation for a continuing Committee on External Relations, it was the sense of the Committee that such committee should be made up of members of the Society at large, having at least one member from each district, and having in its membership one member of the Board of Direction. This subject was debated at length, and it was believed by the Committee that this course should be followed for the following reasons:

"A.—That the efficient conduct of the work of such a committee would constitute too great a burden to be laid upon the members of the Board of Direction in addition to their regular administrative duties.

"B.—That the efficiency of this committee would be enhanced by continuity of service.

"C.—That the committee should be sufficiently large and representative to provide for the proper division of its duties, so that the various subjects within its purview might be adequately handled and proper co-operation effected with local societies engaged in similar activities.

"It was the sense of the Committee that the Board of Direction should empower this committee to formulate policies, which, after the approval of the Board, should be carried out by the committee as to the details of application.

"It was also the sense of the Committee that this Committee on External Relations should take the initiative in matters coming under its jurisdiction.

"Upon motion, duly seconded, and unanimously carried, a sub-committee, consisting of Messrs. Gerber, Morris, Snyder, Horne, and Means, was appointed to draft a resolution expressing the opinion of the Committee that there should be appointed as a part of the administrative machinery of the Society a continuing Committee on External Relations, which resolution should incorporate the ideas and provisions hereinbefore mentioned as expressing the sense of your Committee.

"Upon motion, duly seconded, and unanimously carried, the Chairman appointed a sub-committee consisting of Messrs. Chevalier, Burton, and Grant to prepare a

draft of the report to be submitted by the Committee to the Board of Direction in accordance with its precept.

"The Report of the Sub-Committee appointed to draft a suitable resolution was received and discussed, and upon motion, duly seconded, the following resolution was unanimously adopted:

"Whereas, The Committee appointed by the Board of Direction to consider and make recommendations concerning the governing of the external relations of the Society, with other engineering societies, has met and discussed at length the subject-matter set before it, and

"Whereas, The opinion of the members present was to the effect that the best interests of the Society would be furthered by the appointment of an aggressive continuing committee to initiate and consummate through the Board of Direction all matters connected with external relations, and to actively co-operate with other allied technical organizations,

"Therefore, Be It Resolved: That this Committee recommend to the Board of Direction that it appoint such a committee to be known as the Committee on External Relations to be composed of Corporate Members, of whom one shall be a member of the Board of Direction, two from District No. 1, and one from each of the other districts, appointed by the Board of Direction, acting with the advice of the membership of each district.

"Resolved, Further: That the expense of the Committee be provided for in accordance with the regular procedure for Special Committees."

"The report of the Sub-Committee appointed to prepare the draft of the report for the Committee was received, discussed, and upon motion, duly seconded, this, the report of your Committee, was unanimously adopted, and is hereby respectfully submitted:

"R. C. MARSHALL, JR., *Chairman*,

"WILLARD T. CHEVALIER,
GEORGE A. JOHNSON,
RALPH W. HORNE,
C. ARTHUR POOLE,
K. C. GRANT,
J. H. DUNLAP,

W. D. GERBER,
W. J. BURTON,
JOHN S. MEANS,
S. B. MORRIS,
F. M. RANDLETT,
C. H. SNYDER."

I may add that in the appointment of that Committee the controlling idea was to get a committee either of the younger men, or at all events, of men of large acquaintance among the younger men, and who might be closely in touch with them, so that the Board might have the advantage of the viewpoint of younger men on the general situation in which the Society found itself at that time.

At the same time the Board voted to appoint a committee consisting of the Past-Presidents of the Society to review the report of the aforesaid Committee when received, and to consider all occurrences up to that time in connection with this general subject. That Committee of Past-Presidents was furnished with the documents relating to the action in these matters taken by the Society during the last two or three years; and when the report just read had been received, it was turned over, together with the other material, to the Committee of Past-Presidents.

The report received by the Board from this Committee is as follows:

REPORT OF THE COMMITTEE OF PAST-PRESIDENTS.

"NEW YORK, JANUARY 11TH, 1921.

"TO THE BOARD OF DIRECTION,

"AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN.—The Committee of Past-Presidents appointed by the Board at its meeting of November 9th and 10th, 1920, begs leave to state that it held a meeting at the Society House, January 11th, 1921, and it submits this report to the Board.

"The Committee has considered, as it was directed to do, the report of the Committee on External Relations, dated December 31st, 1920. Practically the only action recommended by that Committee was the recommendation to the Board of Direction 'that it appoint a continuing Committee on External Relations to be composed of Corporate Members, of whom one shall be a member of the Board of Direction, two from District No. 1, and one from each of the other districts, appointed by the Board of Direction, acting with the advice of the membership of each district.'

"The Committee of Past-Presidents has given careful consideration to this recommendation and as a result of its deliberation it has unanimously passed the following resolution:

"*Voted:* That it is the sense of this Committee that it is not desirable to appoint a continuing Committee on External Relations, as recommended in the report of the Committee of the same name, dated December 31st, 1920, inasmuch as the Board of Direction represents all districts and has power to carry on any business that is properly within its function, including the power to appoint a Committee on External Relations at any time it may see fit.'

"During the past three years the Society has expressed its opinions by voting on a variety of matters, including the Questionnaire of April 14th, 1920, the ballot on Amendments to the Constitution of October 6th, 1920, and the question of joining the Federated American Engineering Societies. After expressing its opinion in favor of adopting 'the principle of becoming an active National force in economic, industrial, and civic affairs', and in favor of 'actively co-operating with other engineering and allied technical associations in promoting the welfare of the Engineering Profession', it voted against becoming a member of the Federated American Engineering Societies. This was not on account of any antagonism to that Federation or from any lack of desire to co-operate with it or to take an active part in economic, industrial, and civic affairs.

"This Committee regards the question of co-operation as the great outstanding question before the Society and it has unanimously passed the following resolution:

"*Voted:* That the Board of Direction be requested to keep in touch, so far as practicable, with the doings of the Federated American Engineering Societies and all other National engineering associations; that it request the Councils of said Federation and other associations to notify the Board of Direction whenever any question arises involving the interests of the Engineering Profession as a whole, and in which the co-operation of the American Society of Civil Engineers is desired by the Federation and like associations; that it assure the Federation and like societies of its willingness and desire to co-operate in the consideration of such questions and to lend the influence of the American Society of Civil Engineers to their correct solution; that it also undertakes to keep the Federation and like societies informed of any similar questions, which may be considered by this Society, in which the co-operation of the Federation and like societies is desired, the aim being to promote the harmonious co-operation of all organizations in questions in which the Profession may be of service.'

"The Society voted in favor of the creation of Local Sections, but it defeated the constitutional amendment providing for Local Sections, probably because that amendment required every member to join a Local Section. This Committee is in favor of the establishment and encouragement of Local Sections of the Society, under rules adopted by the Board of Direction.

"The Committee transmits herewith to the Board of Direction the report of the Committee on External Relations, as directed by the Board.

"Respectfully submitted,

"DESMOND FITZGERALD, *Chairman.*

"J. A. BENSEL,
GEORGE H. BENZENBERG,
F. S. CURTIS,
CLEMENS HERSCHEL,

CHARLES MACDONALD,
CHARLES D. MARX,
GEORGE H. PEGRAM,
GEORGE F. SWAIN, *Secretary.*"

ACTION OF THE BOARD OF DIRECTION.

The Board of Direction, being in sympathy with the idea that local activity of Society members, or Local Sections where they existed in different parts of the country, was desirable, but recognizing, on the other hand, the very serious burden of expense which would be involved by having a second group of men, such as that suggested by the first mentioned Committee, in addition to the Directors from the several districts, made the following recommendation to the incoming Board of Direction, preferring not to take action itself, but to refer it to the incoming Board, so that the Board which will administer the affairs of the Society during the coming year might have a free hand in determining its course of action. The motion passed was as follows:

"Moved: That this Board of Direction suggests to the incoming Board of Direction, in the light of the two reports just received (from the Committee of Corporate Members to Consider External Relations and from the Committee of Past-Presidents appointed to Review and Transmit to the Board the former report), that it would be to the advantage of the Society to have the Board of Direction sit as a Committee of the whole in matters touching upon the external relations of the Society, at its Quarterly Meetings, and to appoint in such centers or districts as may appear to it desirable Local Committees to act under the chairmanship of the member of the Board of Direction of the district upon these matters, in order that the work of the Committees and of the Society may be properly co-ordinated without undue expense to the Society."

I think that is all, Mr. President.

REPORT OF COMMITTEE ON REFERRED AMENDMENTS.

THE PRESIDENT.—The next order of business is the report from the Committee on Referred Amendments, Peter Junkersfeld, Chairman.

PETER JUNKERSFELD, M. AM. SOC. C. E.—The Committee on Referred Amendments presents the following report:

"JANUARY 19TH, 1921.

"TO THE AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN.—Pursuant to action taken at the Annual Convention of the Society at Portland, Ore., August 10th, 1920, and the subsequent appointment by the Board of Direction of a Committee of eight to consider those amendments which had been referred by the Business Meeting of the Annual Convention to a committee, with certain restrictions and powers, and all in accordance with Article IX, Section 4, of the Constitution, your Committee now reports as follows:

"It has considered all the amendments referred to it as above described, and recommends that they be not adopted.

"This action is deemed necessary because certain other amendments, bearing the same date, were defeated by the ballot canvassed October 6th, 1920. These defeated amendments were closely interrelated with some of the amendments referred to your Committee, and as a result of these conditions the Committee is unanimous in the conviction that the best interests of the Society require an all-inclusive study and revision of the Constitution.

"This conclusion was reported to the Board of Direction under date of November 2d, 1920, and authority has been granted this Committee to continue with its work along these lines.

"The Committee therefore recommends that a copy of this report be issued by the Secretary of the Society with the letter-ballot on the amendments in question.

"Respectfully submitted,

"PETER JUNKERSFELD, <i>Chairman</i> ,	
"L. R. ASH,	L. L. HIDINGER,
A. S. BALDWIN,	E. J. SCHNEIDER,
J. F. COLEMAN,	P. H. NORCROSS, <i>Secretary</i> ."

I would like to add just a word of information. Your Committee, as referred to in this report, has continued and made an all-inclusive study. This work is so near completion that it is already in page proof, and the Committee confidently expects that the work in page proof will be ready for presentation in due form to the Society at the next Annual Convention. In the meantime, the Committee presents this report and hopes that some action will be taken at this meeting.

THE PRESIDENT.—What shall be done with the report of the Committee on Referred Amendments?

GARDNER S. WILLIAMS, M. AM. SOC. C. E.—Mr. President, in view of the fact that we shall have other amendments to consider during this meeting, I move that the consideration of this report be postponed until we take up the consideration of those other amendments.

RICHARD L. HUMPHREY, M. AM. SOC. C. E.—I second the motion.

THE PRESIDENT.—It is moved and seconded that the consideration of the report just submitted be postponed until after the consideration of other amendments which have already been sent out to the membership and should be up for consideration in the regular order at this meeting. Are you ready for the question? Those in favor of the motion please say "aye"; contrary, "no". The "ayes" seem to have it; the "ayes" have it.

The action on this report, therefore, is postponed, and it is now in order to take up the consideration of the amendments which have been sent out to the membership for their information, and which under the regular order prescribed by the Constitution are to be brought up for action at this Annual Meeting.

MOTION TO REFER NEW AMENDMENTS TO A COMMITTEE.

HUNTER McDONALD, PAST-PRESIDENT, AM. SOC. C. E.—I do not consider it practicable for this matter to be considered intelligently now, for the reason that the amendments now proposed are interlocked with those which have already been under consideration by the Committee; and I move, therefore, that these amendments be referred to a special committee to be appointed by the Chair to consider their relation to each other, and their relation to the previous amendments which have just been reported upon, that committee to report at the afternoon session. I take it that the meeting will certainly remain in session until after a recess for luncheon.

E. B. WHITMAN, M. AM. SOC. C. E.—I second the motion.

THE PRESIDENT.—You have heard the motion, and it has been seconded. Are you ready for the question?

A. S. BALDWIN, M. AM. SOC. C. E.—As a member of the Committee on Referred Amendments, I would like to suggest that, in the interest of progress, these additional proposed amendments be referred to that Committee for action. My object

is to get some definite revisions of the Constitution before the members as quickly as possible. The work of the Committee on Referred Amendments is nearly ready for submission. If these additional amendments can be referred to that Committee they can be considered by it, co-ordinated with the work already done, and presented with its report to the next Annual Convention.

It is a matter of great importance that a revised Constitution should be presented. My proposal is not at all with the idea of enlarging the scope of the work of this Committee, but rather of hastening the time when we may have some definite action by the Society in the adoption of a new Constitution.

THE PRESIDENT.—You therefore offer a substitute motion, Mr. Baldwin?

MR. BALDWIN.—I move that as a substitute.

GEORGE W. FULLER, M. AM. SOC. C. E.—I second the substitute motion. I think we have had a very fair-minded committee studying all these questions of amendments, and it seems to me that a discussion of these amendments on the floor is not going to be fruitful. We have had some experience in an important Convention in that respect, and it cannot be shown that a discussion of any one sentence or any one amendment or any one clause will really aid in solving this problem.

Gentlemen, we have a big proposition before us. We have to replace and make modern the Constitution and By-Laws under which the affairs of this Society are governed. This Committee, of which Col. Junkersfeld is Chairman and Mr. Baldwin is a member, has been quite active. It has a report in page proof which has not yet been distributed, but which is on the point of completion, and I understand that it is going to take up for review all of those amendments which were presented to the Society in November and which were mailed to the membership within the last few weeks.

I hope that the substitute motion of Mr. Baldwin to refer all these matters to this Committee on Referred Amendments will prevail.

MOVE TO LAY SUBSTITUTE MOTION ON THE TABLE.

MR. HUMPHREY.—Mr. President, a great many of the remarks of the previous speaker undoubtedly will receive a sympathetic response from many members of this Society, but I think there is a growing feeling among those who come to these Annual Meetings that we are here to transact the business of the Society, and to express our views as to how Society business should be transacted. I think all who have had any experience on committee work certainly know that no one group of men is infallible.

In the amendments now pending, and referred to in the resolution of Mr. McDonald, there are matters that are basic. They are the real heart of the Constitution, and it seems to me that this meeting could certainly spend its time profitably in discussing these amendments, so that whatever the final action may be, there may be obtained the benefit of the opinions of the men who are here assembled. I certainly believe that the course offered by Mr. McDonald for trying to get these amendments in such shape that we can discuss them in logical order, will be effective. If it is going to be the will of the Society that we meet in Annual Meeting and delegate all our work to committees and have no opportunity to express an opinion, then I think this Society is lacking as an efficient working

body, and I certainly hope that the members at this Annual Meeting will defeat the substitute motion made by Mr. Baldwin.

I move, therefore, that the substitute motion be laid on the table.

P. H. NORCROSS, M. AM. SOC. C. E.—Under the Constitution of the Society, as it exists to-day, the Society has no option with the referred amendments which have just been reported on, except to send them to letter-ballot. The new amendments that are before the Society may be discussed, may be sent to letter ballot, or may be referred to a committee.

For the information of the gentleman who has just spoken I might say that, in my opinion, if the Society takes no action on the report of this Committee, those amendments that it has reported on must go to the Society for letter-ballot; and it is immaterial whether you vote "aye" or "no" on them, or accept our report. As a matter of fact, those amendments will have to receive consideration in a referendum at the earliest possible moment, as provided by the Constitution.

With reference to the new amendments I think you are putting the cart before the horse, because I do not think those amendments have come before the meeting.

MR. HUMPHREY.—I rise to a point of order. The President announced that the amendments offered are now before the meeting, and then Mr. McDonald made a statement as to the amendments that come before the Annual Meeting at this time.

The other amendments, to which Mr. Norcross refers, the deferred amendments from the Portland Convention, are on the table, temporarily postponed, while we consider these.

G. H. TINKER, M. AM. SOC. C. E.—I wish to second Mr. Humphrey's motion.

THE PRESIDENT.—The point of order has been made, and must be ruled on; but debate upon the point of order is not excluded before the ruling is made.

I think the point made by Mr. Humphrey as to the amendments that have been introduced here is correct; the Chair was certainly so informed before Mr. McDonald took the floor, and unless there is some further debate on it, the Chair will so rule.

I would like to ask for information from the Chairman of the Committee, whether, if the report of the Committee is approved, action on the deferred amendments is postponed until further report; or, is it the view of the Committee that they must go to letter-ballot in any case? Mr. Norcross expressed some opinion upon it, which I did not understand.

MR. NORCROSS.—My opinion was expressed after reading the Constitution. The Constitution provides that this Committee shall report at this meeting. The Constitution further provides that after that report a referendum ballot will have to be taken on those amendments. I did not understand the President to state previously that the new amendments were now before the Meeting. I did not mean to contradict on that point. I simply wanted to bring out the point that constitutionally we can do nothing else but vote on the amendments that were referred to our Committee, irrespective of our report.

ACTION ON MOTION TO LAY ON THE TABLE.

MR. HUMPHREY.—I rise to a point of order. It was moved, and seconded, that the motion to refer the additional amendments to the Committee on Referred Amendments be laid on the table.

THE PRESIDENT.—A motion to lay on the table is not debatable. The Chair heard no second; that was the reason the question was not put.

MR. TINKER.—I seconded it.

THE PRESIDENT.—I beg your pardon. It escaped my notice. The motion to lay on the table is not debatable. It is moved that the substitute motion made by Mr. Baldwin be laid on the table. There is no debate; those in favor please signify by saying "aye"; contrary "no". The "noes" seem to have it.

MR. HUMPHREY.—I call for a division, Mr. President.

THE PRESIDENT.—Those in favor of laying the motion on the table will please raise the right hand.

As counted by the Chair and the Acting Secretary, there are 110 votes in favor of the motion to lay on the table. Those opposed to that motion please raise their right hands. I think there is no need of counting the hands, as it is impossible—there are too many. The motion to lay on the table is defeated.

MR. METCALF.—Mr. President, I rise for information. Am I correct in my understanding that Mr. Baldwin's motion does not prevent discussion? I did not understand that his motion required immediate reference of the additional amendments to the Committee.

THE PRESIDENT.—The motion to refer to the Committee is debatable, and debate on the amendments might then occur; but I think that if that motion carried it would prevent any other discussion of those amendments.

MR. METCALF.—Do I understand that the ruling of the Chair would be this: If these amendments are now introduced they could not be discussed on the floor, but would immediately go to the Committee; or would they go to the Committee after discussion?

THE PRESIDENT.—Discussion can take place before the adoption of the motion, but if the motion is carried it disposes of the amendments, as the Chair understands it.

MR. METCALF.—The amendments have not yet been introduced.

THE PRESIDENT.—The new amendments have been distributed by mail to all Corporate Members.

TWO SETS OF AMENDMENTS BEING CONSIDERED.

MR. FULLER.—I think that we ought to have this situation clarified somewhat by recognizing that there are two divisions to this question on amendments. As I understand the report of the Committee on Referred Amendments, it was to the effect that, under the terms of the Constitution, all the amendments, sometimes spoken of as the Talbot amendments, must go out to letter-ballot. As I understand it, this Special Committee makes a recommendation that they go to letter-ballot with an adverse recommendation.

In regard to the new amendments which were filed with the Secretary about November 1st, 1920, and were sent to the membership, my thought is that they also should be referred to this Committee, of which Col. Junkersfeld, Mr. Baldwin, and Mr. Norcross are members. To facilitate procedure, I offer a substitute motion to that of Mr. McDonald, that the hold-over amendments from the Portland Convention shall be ordered to letter-ballot by this Annual Meeting, with the recom-

mendation for an adverse vote, and that the new amendments shall be referred to the same Committee.

MR. HUMPHREY.—I rise to a point of order on that motion. The original amendments were postponed, and then the consideration of the new amendments was taken up. The resolution offered by Mr. Baldwin has to do with the new amendments; and if the Meeting passes this motion, according to the Chair's ruling in answer to Mr. Metcalf's query, there can be no individual debate on these amendments. Pending this motion we cannot take the postponed amendments before this meeting, and, therefore, the new amendments must first be postponed.

THE PRESIDENT.—Your point of order is that Mr. Fuller's motion is out of order. It appears to the Chair—I am subject to correction on the parliamentary ruling, if I am wrong, and Mr. Fuller will please do so—that Mr. Fuller's motion is out of order, because there is one substitute motion before the house, and one substitute is all that is possible at one time. The Chair speaks from memory, and unless there is further discussion, rules that Mr. Fuller's substitute motion is out of order for the present.

ALLEN HAZEN, M. AM. SOC. C. E.—Mr. President, I have no amendments or resolution to offer. I just want to say that this question of very numerous amendments is altogether too complicated to be handled effectively by this body. We can discuss the substance of the amendments without taking action on any particular point, but we have a Committee, duly appointed, that has been working on a new Constitution. We want the new Constitution. We want a great deal of the substance of these amendments in it; and if the Committee is not large enough to be representative—my neighbor says his district is not represented on it—I suggest that there should be a way to enlarge that Committee to make it as representative as it needs to be to handle the matter adequately.

THE PRESIDENT.—The question is on the substitute motion offered by Mr. Baldwin.

CONSTITUTIONAL REQUIREMENTS AS TO AMENDMENTS.

MR. WILLIAMS.—I would like to clear the atmosphere if I can. There are certain provisions of our Constitution in regard to amendments that are as inviolable as the laws of the Medes and Persians. The amendments that were proposed at the Portland Convention, and referred to this Committee and by that Committee reported back here, must be sent to letter ballot, whether this meeting acts on them or not.

Now, there is another group of amendments that have been circulated in printed form to the membership. In that group you will find in some instances three amendments which are nearly the same thing and dealing with the same subject.

The provision of the Constitution is that these new amendments may be amended, they may be referred to a committee, or they may be sent to ballot. If all are referred to a committee, when that committee reports we shall still have a group of amendments to be dealt with. If they are referred to the existing Committee on Referred Amendments, and it reports at the next Annual Convention, we shall then be in the predicament of having a new Constitution to be voted on, and also these individual amendments will have to go out and be voted on, and I think that the resulting confusion will be detrimental.

Now, it was my idea in moving to refer these—or it was the idea of Mr. McDonald in moving to refer these amendments to a committee, that it would be possible so to amend them that they might be treated by this meeting in the same manner as it is suggested that we treat the amendments which come to this meeting from the Portland Convention. If it is thought best by this meeting to recommend that all these amendments go to letter-ballot and be defeated, it will clear the slate and will leave the field open for the Committee that is acting on a general revision of the Constitution to proceed entirely unhampered. If these amendments remain with that Committee they must necessarily come up to trouble us at another time.

I may say to you very frankly, gentlemen, that we all know there is a division of sentiment here. We do not know which group is going to have the support of the majority of the members of this Society; but I wish to state, as one of those who have called themselves progressives and have been designated as radicals, that we are prepared to bow to the will of the majority of the Society. If it shall prove that the gentlemen who call themselves the true progressives, and whom we call the reactionaries, are the winners in this fight, they can expect from us no obstruction.

It was our thought—I am frank to say that Mr. McDonald's motion is the result of consideration—that if this matter should be postponed until the afternoon session, we would by that time probably know which division of this Society—I am not going to call it faction, gentlemen, as I do not like that word—which division of this Society has the approval of the majority of the membership, and we would then be able gracefully to proceed in the light of that information. I promise you, however, gentlemen of the other side, that if you are the winners, there will be no obstruction from those who have been associated with me.

C. FRANK ALLEN, M. AM. SOC. C. E.—It is interesting to hear from the last speaker that he thoroughly understands the purpose of Mr. McDonald's motion, and that the organization on that side seems to be thoroughly complete. Not being connected with any such organization, it appears to me that the earlier motion not to consider the report of the Committee until these other amendments should be taken up, if carried, leaves the meeting in a position where it must now consider the new amendments, but not the amendments that this Committee has partly completed but has not actually submitted, the report still being only in page proof.

We are thus in a position to consider simply what has been presented by one side, and to me that is not the fairest way of proceeding, nor the way by which we can get the best results. Personally, I question whether it is altogether polite to a committee of the Society. I believe the best results would be reached if both sets of amendments—those proposed by the progressives or radicals, or whatever you call them, together with the amendments which the Committee already has in hand—should be considered, and the matter be taken up very fully.

The temper of this meeting, as I understand it, is not that Mr. Baldwin's motion shall be defeated without discussion. This body has already announced itself, and I believe it is ready to announce itself on the main proposition of refer-

ence to this Committee for a comprehensive study of the whole situation, and that it is ready to vote the same way.

LEWIS D. RIGHTS, M. AM. Soc. C. E.—Mr. Williams made a suggestion which seems to be a happy way out. He suggested that these amendments which have been presented to the membership be sent to letter-ballot with a recommendation that they be defeated. As he says, that would clear the slate. It would give the Committee on Referred Amendments a chance to present a complete Constitution; and it seems to me to be perhaps the best way to clear up the whole situation and give that Committee a fair chance. I therefore move an amendment to Mr. McDonald's motion that these amendments—

THE PRESIDENT.—Mr. Rights, excuse me, the parliamentary situation is that the substitute motion of Mr. Baldwin is before the House; that substitute is subject to amendment, not the original motion.

MOTION TO AMEND THE SUBSTITUTE MOTION.

MR. RIGHTS.—I move to amend Mr. Baldwin's substitute motion as follows: That all these new amendments be referred to the membership for letter-ballot, with a recommendation that they be defeated—that every amendment be defeated. Now, gentlemen, I am saying this because I feel that I have some right to say it, for, as you will see, I am a signer of the first two of these new amendments. I think they are first only because I happened to get them in first to the Acting Secretary.

These new amendments, which I assisted in getting up, were not offered with the idea of forcing anything on the membership, but with the thought that if they were put at this time before the members, they would have a chance to think them over, and the Committee would get the benefit of other views.

MR. BALDWIN.—In answer to the statement of Mr. Williams I would like to say that if there is one question which should be absolutely divorced from factionalism it is the question of the adoption of a Constitution by this Society.

I may say that the Committee on Referred Amendments has kept itself in an absolutely neutral position in this controversy. One of the things most desired by the Committee is that, as a result of its work, it may help to stop factionalism, that we may have once more a thoroughly united Society.

There was absolutely no intention on my part whatever to shut off discussion of any of these questions. The new Constitution and By-Laws cannot, under the present Constitution, be passed until the next Annual Convention. The new amendments are irreconcilable with one another in some instances. Some of them have been directly voted down by the Society. This Meeting is not in a position to judge of the meaning of these amendments at this time. I believe, therefore, that in the interests of harmony and the accomplishment of what the Society desires, it is best to refer these new amendments, as they have to be referred, constitutionally, as I understand it, to the membership, with the recommendation that they shall not be passed.

The present Constitution requires that if the new Constitution is to be considered at the next Annual Convention, it must be offered sixty days before the meeting, and we are confidently able to state that it shall come up in due form at that time, and any extended discussion now could not be instructive.

THE PRESIDENT.—Do you second the amendment or accept the amendment made by Mr. Rights?

MR. BALDWIN.—I do not accept it.

DIFFICULTIES IN GETTING NEW AMENDMENTS PASSED.

MR. TALBOT.—I second Mr. Rights' amendment. I am not one who is very enthusiastic about the possibilities of this Society accepting by a two-thirds vote amendments to the Constitution, or a new Constitution. I say this in view of the history of the Society for the past fifteen years in regard to constitutional amendments. It would seem as if a new day were coming if we should have anything like unanimity in the voting on constitutional amendments.

Now, we have a peculiar provision under the present Constitution, which has been referred to several times, that these amendments which have passed to the stage of coming before the Annual Meeting or the Annual Convention, must ultimately be sent out for vote regardless of the wishes of any committee which may consider them, and regardless of the wishes of these meetings.

I feel that the suggestion made by Mr. Williams and the motion made by Mr. Rights are in the right direction. We ought to clear the slate. Referring these amendments to the Committee that is already in existence would mean that there would be confusion whenever it made its report. If we sent these out to vote, with or without a recommendation that they pass or do not pass, the result will be that they will be out of the way, and when the report from this Committee is received we can act favorably or unfavorably.

Suppose, for example, that this Committee recommended a new Constitution, and it were sent to letter-ballot, and these other amendments were up for vote at the same time, members would be voting favorably on one and unfavorably on the other, or unfavorably on one and favorably on the other, in such a way that there could not be a two-thirds majority. There would be much more possibility of the passage of the amendments if there were but one issue before the Society. I favor a discussion by this Meeting on the merits of these proposed amendments, rather than to refer them to a committee at this time. I recall how a year ago time was frittered away by parliamentary discussion, rather than discussion on the meaning of the amendments and the effect of them; but as this meeting seems to be in the same condition as that of a year ago in that respect, I am glad to second and support the motion of Mr. Rights.

MR. FULLER.—I would like to rise to a question of personal privilege, so that we may all understand what Mr. Rights' motion is. Do I understand, Mr. Rights, that the motion would then be that the amendments, the hold-over amendments and the new amendments, would go to letter-ballot with the recommendation of adverse vote?

MR. RIGHTS.—As I understand it, we are not considering the deferred amendments at the present time, is that correct? We are considering the new amendments.

THE PRESIDENT.—That is true.

MR. RIGHTS.—My motion was that the new amendments be referred to letter-ballot with adverse recommendation, but I am willing to include also the deferred amendments.

MR. FULLER.—I now understand that the substitute amendment of Mr. Rights is that all the proposed amendments go out to letter-ballot with the recommendation of this Annual Meeting for an adverse vote? If I am correct, that is what Mr. Talbot supports, and what Mr. Rights supports. That is what I ask support for now.

MR. BALDWIN.—I accept that amendment of Mr. Rights.

THE PRESIDENT.—I would like to have an expression of opinion as to the effect of the Constitution on the point whether it is not possible to combine these amendments and refer them all to some committee and omit this letter-ballot with an unfavorable recommendation?

MR. FULLER.—I understand that these hold-over amendments of the Portland Convention must go out to letter-ballot now, and there is no way of holding them or referring them to a new committee.

THE PRESIDENT.—That seems to be in accordance with past precedents, and with the opinions expressed to-day, and the Chair will so hold.

MR. HUMPHREY.—The amendments before this meeting cannot be withdrawn, even though the proposers want them withdrawn. They are before the Society, and must be voted on.

DISCUSSION ON AMENDMENTS.

THE PRESIDENT.—That is correct. A great deal has been said about the necessity of discussing these amendments, and the Chair wishes to state that the amendments are open to discussion now. If they are referred to a committee they cannot be discussed. The Chair does not wish any ruling he has made, or any opinions expressed upon possible rulings, to be construed as an effort to cut off discussion, because that is not the intention.

H. F. SCHRYVER, ASSOC. M. AM. SOC. C. E.—I am instructed by the Central Ohio Section, recently organized in Columbus, Ohio, to say that this Section is in favor of a negative vote on all these amendments, both the old and deferred, of an annulment of the present Constitution, and of a new Constitution which can be understood by all.

S. WHINERY, M. AM. SOC. C. E.—Mr. President, I rise to a point of order, which, if decided as I think it will be, will probably clarify this situation. Under the Constitution as it now reads, we cannot deal in any way with what are called the Portland amendments, which have been reported on by the Committee, except to send them out to letter-ballot. I raise the point of order that they are beyond consideration except that they may be discussed here.

THE PRESIDENT.—The Chair has already so ruled on that point. Are you ready for the amendment of Mr. Rights to the substitute motion of Mr. Baldwin?

MR. ALLEN.—Will you please state it.

MR. RIGHTS' AMENDMENT CARRIED.

THE PRESIDENT.—The amendment to the substitute motion, which amendment was offered by Mr. Rights, is that the deferred amendments and all the amendments that are now before the house be sent out to letter-ballot with the recommendation that they be defeated. The question is on the amendment being adopted.

Then the substitute motion will be in order. Those in favor of the amendment, please signify by saying "aye"; contrary, "no". The "ayes" have it.

The substitute motion as amended, is now before the house.

MR. FULLER.—May I rise to a point of order. Was not that motion accepted by Mr. Baldwin and so disposed of?

THE PRESIDENT.—It is now disposed of in another way. There is always a question about the parliamentary power in a matter of that kind, and I preferred to put it to a vote. Mr. Baldwin, will you state your substitute motion, as amended?

MR. BALDWIN.—I am getting a little mixed up on this.

THE PRESIDENT.—Your substitute motion has been amended by Mr. Rights. Now, the question before the house is your substitute for Mr. McDonald's motion.

MR. BALDWIN'S REVISED SUBSTITUTE MOTION CARRIED.

MR. BALDWIN.—I offer, as a substitute for my original motion, that the matter be referred to the Society with a recommendation against the adoption of all the amendments. My original substitute related to the new amendments only.

THE PRESIDENT.—Exactly.

MR. BALDWIN.—As amended by Mr. Rights, it includes also all the other amendments, and disposes of the whole matter.

THE PRESIDENT.—The Chair so understands, and desired to put the question in that form; but a vote on the amendment was called for. The amendment has passed. The original motion must now be voted on.

Those in favor of the substitute motion, please signify by saying "aye"; contrary, "no". The substitute motion is carried.

MR. McDONALD.—I made my original motion with the definite idea that it would be well for this meeting to wait for the result of the count of the ballot for officers, in order that the sentiment of the Society, thus indicated, might then be expressed on the fundamental principles on which we seem to be divided.

I made the motion that it be referred to a special committee for the reason that it is my conception that the present Committee expires when it has made its report. This Committee has now made a progress report; and if we expect it to consider this matter further, it must be reappointed. This Committee was appointed as a result of resolutions passed by the Portland, Ore., Convention with instructions to report at this meeting, and I conceived the idea that this Committee's function expired at this meeting, unless it be reappointed.

MR. NORCROSS.—I would like to explain, for the benefit of Mr. McDonald and others, that this Committee's work is completed with that report; but if Mr. McDonald had followed closely the reading of that report, he would have understood that the Committee's conclusion regarding these deferred amendments required that it request of the Board of Direction authority to proceed with an all-inclusive study of the Constitution; and under date of November 9th this Committee was continued; and as I understand it, is still in existence for the purpose of drafting a new Constitution. So far as the referred amendments are concerned, it has completed its work.

THE PRESIDENT.—The Chair wishes to state that Mr. Norcross is correct. The functions of this Committee were expanded by a resolution of the Board of

Direction to complete a study of the Constitution, and unless otherwise pointed out, the Chair will rule that this Committee is not discharged or continued except in accordance with the action of this meeting. A motion was made to continue the Committee. That motion has been postponed by vote of this meeting, and the Committee can be either discharged or continued at the will of this meeting.

MOTION TO CONTINUE THE COMMITTEE ON REFERRED AMENDMENTS.

MR. FULLER.—I move that this Committee be continued and that it report on a new Constitution and By-Laws at the next Annual Convention.

T. C. HATTON, M. AM. SOC. C. E.—I do not know how many members of the Committee there are; but this is a very important subject. It practically means a new Constitution; that is, it ought to mean a new Constitution; and while I am somewhat in favor of Mr. Fuller's motion, I think that the members of this important Committee should represent every district of the Society. Certainly a few members of such a committee cannot form a Constitutional Convention. I fear we are getting worse than the average State Legislature, and that is bad enough; I do not think that one-tenth of the membership of the Society knows what you are driving at.

Let us have a Constitutional Convention, if necessary, with a full representation from every district of the Society; and then have these amendments to the Constitution well thought out, correlated as they should be, and then let us vote on them in an intelligent manner. We cannot vote on them now. Nobody can. Here are a lot of scraps, some on one side and some on the other, and those of us from the West do not know what it is all about. We should have a Constitutional Convention, and know what we are doing. It is very apparent in this meeting that we do not know.

MR. RIGHTS.—I rise to a point of order. We have not, I believe, voted on Mr. McDonald's original motion.

THE PRESIDENT.—The substitute motion was carried.

MR. RIGHTS.—And that replaces Mr. McDonald's motion?

THE PRESIDENT.—Yes.

J. A. A. CONNELLY, ASSOC. M. AM. SOC. C. E.—Will the President please inform the meeting how many members are on this Committee?

THE PRESIDENT.—The Chair was about to ask the Chairman of the Committee, Mr. Junkersfeld, to inform the members on this subject; how many members constitute this Committee; if there are any vacancies, and if so, in what districts.

MR. JUNKERSFELD.—The Committee was appointed at the Portland, Ore., Convention; of the eight members, seven have served. The other member, at the time of the original call, told us that he could not attend the first meeting, but hoped to be able to attend the second. He did not attend the second, so with his consent, we asked another man. The second man was also unable to serve.

Since then that vacancy has not been filled, and the Committee has continued its labors with seven members, so that there is one vacancy on the Committee.

MEMBERSHIP OF THE COMMITTEE ON REFERRED AMENDMENTS.

THE PRESIDENT.—Have you the names of that Committee? Undoubtedly the meeting would be interested in hearing them.

MR. JUNKERSFELD.—The vacancy was from the Northwest. Mr. Franklin I. Fuller was the original appointee from the State of Washington. We later asked Mr. Samuel H. Hedges, of Seattle, Wash., to serve. Neither of the two was at the Convention.

THE PRESIDENT.—Will you read the full membership, and state, if you can, what districts they are from.

MR. JUNKERSFELD.—The other members are Messrs. Louis R. Ash, of Wichita, Kans.; Archibald S. Baldwin, of Chicago, Ill.; John F. Coleman, of New Orleans, La.; Leroy L. Hidinger, of Memphis, Tenn.; Edward J. Schneider, of San Francisco, Cal.; Paul H. Norcross, of Atlanta, Ga.; and the Chairman, of Boston, Mass.

MR. McDONALD.—Do I understand that this Committee is authorized to fill vacancies on it?

THE PRESIDENT.—The Acting Secretary informs me that that is the situation. The Committee is authorized to fill vacancies. The Committee originally consisted of eight; it has one vacancy now.

MR. NORCROSS.—This Committee, since its appointment last August, has had five meetings, which, I presume, is almost a record for special committees. I know it has been at a great deal of personal sacrifice on the part of many members of the Committee. We tried very hard to select another member in accordance with our instructions and authority to fill vacancies. Our work has not been sectional. It may be the sense of this meeting that the Committee's personnel should be complete, but the Chairman has told you that its work is nearly complete.

In answer to Mr. Hatton's suggestion that this Committee should cover all districts, I may say that any group of five men can submit amendments to the Constitution. Whatever the Committee submits must go through the regular channels, either for rejection or adoption, and the Constitutional Convention desired by Mr. Hatton will be the next Annual Convention, at which I trust he will be present.

THE PRESIDENT.—In order to clarify the situation, will the mover of the motion restate it?

MR. FULLER.—I move that this Committee of eight (actually seven, as I understand it) on Referred Amendments be continued, and that it present a new Constitution and By-Laws in accordance with the procedure required by the present Constitution for consideration at the next Annual Convention.

AMENDMENT TO INCREASE MEMBERSHIP OF COMMITTEE.

THOMAS EARLE, M. AM. SOC. C. E.—I move, as an amendment, that additional members be appointed to this Committee by the Board of Direction, so that there will be on that Committee a member from each district.

THE PRESIDENT.—How many in all?

MR. EARLE.—To the eight as authorized, add enough to make one from each district; in other words, the districts not represented shall each have a member on the Committee.

F. A. MOLITOR, M. AM. SOC. C. E.—If the amendment is not seconded, there will be no occasion for my speaking on it. As I understand it, it has not yet been seconded.

MR. HATTON.—I second the amendment that a member from each district be on the Committee.

MR. MOLITOR.—Mr. President, the Special Committee on Referred Amendments consists of a personnel in which I believe the whole membership has entire confidence. To be sure, it is not representative of all the districts, but it is wholly representative, geographically speaking, of the Society. It has performed a great deal of work if it has a Constitution and By-Laws in page proof. It seems to me, therefore, to be distinctly unwise to change in any way the personnel of this Committee, by additions or otherwise, especially additions, because they would have to go through all the work so far accomplished by it. In all probability, this Committee has been created wisely by a meeting of this Society, to report to a meeting.

Three years ago, in 1917, a similar committee reported, or endeavored to report, a revised Constitution and By-Laws, which, I am sorry to say, failed; but, as I recall it—I may not be absolutely correct in this—but, as I recall it, it failed in the Board of Direction. Now, this Committee is doing the work that three years ago a similar committee performed, and failed to have adopted, and I hope that if this Committee is continued without additions, and is permitted to complete its work and report at the Annual Convention, we will have a Constitution, brief and covering only what a Constitution should cover, with complete By-Laws for the general government of the Society, that may be changed from time to time as the affairs of the Society require. I earnestly hope that this last amendment will be voted down.

MR. FULLER.—I wish to endorse every word of the preceding speaker. I think it is entirely unworkable to change the personnel of the Committee at the present time. It is within 60 days of the completion of its work of revising the Constitution; it has worked together and its operation would be hindered by any additional appointments. I would like to call your attention to this fact that there is no representative from the New York District on that Committee. I hope the amendment offered by Mr. Earle will be defeated.

PAUL G. BROWN, M. AM. SOC. C. E.—I had the misfortune to serve for 2½ years on the Development Committee that this Society saw fit to appoint. Based on my experience, I wish to state that if you appoint one man from each district of the Society to that Committee, the Committee will not agree on a report. You cannot get that many engineers to agree on a report.

GEORGE S. DAVISON, M. AM. SOC. C. E.—I hope this amendment will be defeated. The experience of all of us is that it is possible to have too large a Committee dealing with an important matter. If this Committee is doubled or trebled it will have the labor of educating every new man, and I think we all agree that the gentlemen on the Committee who have spoken on the floor, show a remarkable degree of intelligence.

(Cries of "question".)

THE PRESIDENT.—The Chair is not going to be party to any scheme for cutting off debate.

D. C. HENNY, M. AM. SOC. C. E.—Mr. President and Gentlemen: The Committee as now constituted was appointed by the Board of Direction shortly after the Annual Convention at Portland, Ore. One of the members proposed from the Pacific Coast was Mr. Fuller. I stated to the Board that Mr. Fuller was an ideal man for the purpose, but that I knew that his business occupied so much of his time that I feared he would be unable to attend the meetings. The results have been as I anticipated at that time.

Now, I am in sympathy with the feelings expressed by the gentlemen speaking on this amendment, in general sympathy. If this Committee is to do its work it would be a great waste to lose the value of the work already accomplished; but I do not think that we should fail to carry out the general opinion expressed at the Portland Convention that there should be two men from the various centers in which the country was divided; consequently, that there should be two men from the Pacific Coast. I therefore move an amendment to the amendment, Mr. President, that this Committee be continued, and that the one vacancy on the Committee be filled by the incoming Board of Direction.*

MR. FULLER.—I accept the amendment.

MR. JUNKERSFELD.—Mr. President, I would like to point out that only about six weeks remain in which this Committee must complete its labor, in order that the new Constitution may reach the next Annual Convention in due form. If this Committee is materially enlarged it will not be humanly possible to finish its work within the time limit. There will be a loss of time; it may be that its work will not come before the next Annual Convention. You may as well realize that now. The present members have worked hard, and have attended to their duties very well indeed, considering the long distances they have to travel. I can see no way of getting the work completed within the next few weeks if you add to the number, at least, it is highly improbable that the work could be completed in time.

THE PRESIDENT.—Was there a seconder to the amendment to the amendment? (Cries of "No".)

MR. HAZEN.—I wish to suggest that the draft of the new Constitution will be available very shortly. A preliminary draft, I understand, has been seen by the officers; I have seen a copy of it, and I have confidence in this Committee, even though it has not a New York member on it. If the draft shows any objectionable features, or contains anything it should not, I am sure within six weeks the Committee will be open to any valid suggestion from any member or group of members in the Society.

MR. McDONALD.—In bringing up this question, I may say that it was not because I did not have the fullest confidence in the honesty, skill, and integrity of this Committee—I want that understood. I felt, however, that it was well for its status to be thoroughly understood, so that no one would be in a position to take exception here to any action it might take. We have been informed that the Committee has power to fill its own vacancies; that is accepted, I believe, as correct; and I think now, if this meeting continues the Committee, it will remove any possible question as to its authority in the future.

THE PRESIDENT.—Are you ready for the question?

* The Committee subsequently appointed A. D. Butler, M. Am. Soc. C. E., of Spokane, Wash., to fill this vacancy.

A. E. PHILLIPS, M. AM. SOC. C. E.—I would ask the Chair please to state the question.

THE PRESIDENT.—Will the gentleman who moved the amendment now under consideration please restate it.

MR. EARLE.—In connection with this matter I wish to say that in making the amendment I did not intend any reflection on this Committee. I believe the Committee is a most valuable one; I believe it is a most representative one; and I feel that the work it has done should be recognized by the Society. My only reason for suggesting the amendment was that if this Committee does not represent the entire Society, possibly the same disputes as have already occurred will be repeated at the Annual Convention. It was based on that thought that I made the motion, so that the Committee would have on it a representative from each district.

THE AMENDMENT IS DEFEATED.

THE PRESIDENT.—You have heard the amendment, which has been duly seconded and debated. Those in favor please signify by saying "aye"; contrary, "no". The amendment is lost.

The question now is on the motion offered by Mr. Fuller that this Committee be continued and present its results at the Annual Convention.

MR. RIGHTS.—I rise to a point of order. I think Mr. Fuller's motion was to present its results in time to be considered by the Annual Convention. That must be 60 days before the Annual Convention.

THE PRESIDENT.—Yes; the Chair accepts the correction. Are you ready for the question on the motion. Those in favor of the motion signify by saying "aye"; contrary, "no". The "ayes" have it, and the motion is carried.

There are some announcements to be made by the Acting Secretary.

THE ACTING SECRETARY.—I wish to announce the election by the Board of Direction on January 17th, 1921, of 11 Members, 66 Associate Members, 1 Associate, 14 Juniors, and the transfer of 21 Juniors to the grade of Associate Member.* I also have to announce the following deaths.†

I believe that Mr. J. P. H. Perry, Chairman of the Committee of Arrangements, and in charge of entertainments for the Annual Meeting, has some announcements to make in regard to the programme of excursions.

J. P. H. PERRY, M. AM. SOC. C. E.—Mr. President and Gentlemen: In order to give you definite information regarding the excursions and inspection trips, there have been handed out at the registration desk supplementary programmes, one 4-page and one 12-page folder, to give some details about the inspection trip to-morrow and the five so-called side trips which can be enjoyed this afternoon. There will be at each of these latter points a member of a Sub-Committee of the Committee of Arrangements, each wearing a blue badge, stationed, in general, at the entrance to the building to act as a liaison officer between the owners of the building and this Society.

(Mr. Perry then explained in detail the various plans made for side trips, excursions, entertainments, etc.)

THE PRESIDENT.—The Chairman is requested to ask members of all committees

* See page 149.

† See page 152.

of engineering societies dealing with the appointment of an engineer on the Interstate Commerce Commission, to meet Mr. Charles Hansel, Chairman of the Committee of this Society on that subject, in this room on adjournment for luncheon.

The Chair takes great pleasure in announcing the receipt on January 16th, 1921, of the following letter, and of the action thereon.

(Reads communication* in regard to the establishment of a Memorial to the late Arthur M. Wellington, M. Am. Soc. C. E.)

The Chair takes pleasure in announcing that the Board of Direction, at its Quarterly Meeting yesterday, accepted this offer with thanks.

It is now in order for the meeting to take up any new business that may be presented. I will say for your information that the Tellers' canvass of the vote has not yet been completed. They reported about three-quarters of an hour ago that the work was about half done, and promised another report about 1 o'clock. The regular programme announces luncheon at 1.15 P. M. on the Fifth Floor. It is now 25 minutes before that hour. Is there any new business to come before this meeting?

The Constitution requires the announcement of the results of the election to be made at the Annual Meeting, so that a motion to adjourn before the announcement of the election will not be in order. Unless there is new business, however, a motion to recess until about 2.15 P. M., or until such time as may be desired, will be in order, at which time the results of the canvass will undoubtedly be available for your information.

(On motion, as amended, the meeting recessed to 1.15 P. M.)

FIRST AFTERNOON SESSION.

The meeting was called to order at 1.15 P. M.; President Arthur P. Davis in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 650 members.

THE PRESIDENT.—The hour to which we recessed has passed, and I deem it my duty to call the meeting to order to find out what is your further pleasure, as the Tellers canvassing the ballot have not yet completed their work.

THE ACTING SECRETARY.—I understand that the count will be completed in about three-quarters of an hour.

THE PRESIDENT.—The Acting Secretary says it will take three-quarters of an hour more.

MR. WILLIAMS.—I move that we recess until 2.30 P. M.

(Motion duly seconded.)

MR. PERRY.—A number of members have asked who is to be the speaker for the Annual Smoker to-morrow night. There has just been held a meeting of the Committee of Arrangements, and the members of the Committee are willing to change the first plan of keeping the name secret so as to arouse interest, and to announce the name—Mr. Francis H. Sisson, Vice-President of the Guaranty Trust Company, New York City, who will speak here to-morrow night on the subject "The Engineer, His Future and Relation to the Economic Life of America."

* See page 166.

THE PRESIDENT.—The motion has been made and seconded to recess until 2.30 P. M. Those in favor please signify by saying "aye"; contrary, "no". The motion is carried.

(Recess is taken until 2.30 P. M.)

SECOND AFTERNOON SESSION.

The meeting was called to order at 2.30 P. M.; President Arthur P. Davis in the chair; Herbert S. Crocker, Acting Secretary; and present, also, about 850 members.

THE PRESIDENT.—The hour has arrived, and slightly passed, to which the meeting took recess. I am just informed that the report of the Tellers is almost ready, and is momentarily expected here. The interim can be occupied by any new business which may have occurred to any member during the recess.

While we are waiting for the result of the vote, I would like to say just a word on behalf of the entire membership of the Board of Direction, of the Society at large, and of myself. The differences that we have had during the past few months or years, as you all know, have been dwelt upon, perhaps, more than anything else. I wish to mention a few things about which we all agree:

First and foremost, I think there is unanimous agreement, as far as I know, in the desire to preserve the traditions and the prestige, and especially the high requirements of membership on which this Society has always insisted, and which the tendency is to improve or make more rigid. So far as I know, we are unanimous in that respect.

Another point on which we are unanimous, I am very sure, and which is still more important, is that we all believe in the rule of the majority; and whatever the result of the election that will be announced soon, both the victors and the defeated will accept it with the best grace possible, and give their most cordial support to the men and policies which the Society selects by this ballot, as well as all previous ballots. I hope I can say that on behalf of every member of the Society.

Over the past not Heaven itself has power. What has been, has been; and I have had my hour. Personally, I wish to say that, as a member of the Board of Direction, it will be my desire and effort to carry out in the utmost spirit of harmony and good feeling whatever results are decided on by the ballots that have been taken and the ballots that are to be taken in the future.

If any one has any new business to propose, I think we shall probably have a few minutes before the report of the Tellers; or, if any motion is desired to be made by which a recess can be taken until it is received, the Chair will entertain such a motion.

APPOINTMENT OF ENGINEER TO INTERSTATE COMMERCE COMMISSION.

CHARLES HANSEL, M. AM. SOC. C. E.—I would be glad to get the benefit of the discussion of a question that has been assigned by the Board of Direction to a Committee of which I am told to-day I am Chairman; that is, the Committee to join with committees of other engineering societies, or federations, in respect to an endeavor to secure the appointment of an engineer to the Interstate Commerce Commission.

Of course, when we come together and talk about these high public places, we often say that engineers are very peculiarly fitted to fill any offices in the State. Apparently, however, they have not demonstrated it to the extent of confirming it in the public mind. At any rate, they are not so appointed—which is the answer. I think there is one man, however, who has excelled the majority of engineers in this respect—Mr. Herbert C. Hoover, a member of this Society.

Now, I am strong on public service; that is to say, service for the public. I feel that the engineer has fallen short in that respect, and I think we all in our hearts join in that feeling. The duty that has been assigned to the Committee, in behalf of the Society, is to endeavor to co-ordinate with all other committees of other engineering societies and to join in an appeal to the President of the United States, the incoming President, for the appointment of an engineer to the Interstate Commerce Commission.

I have talked with some engineers on this subject, and they do not all feel that engineers are particularly qualified for such work. I have a great deal to do with the Interstate Commerce Commission. I have a great regard for its members individually, particularly in view of the really enormous job they have. I feel that what we need on that Commission is a fair-minded man. He does not have to be an engineer, nor does he have to be particularly trained in any other particular activity of mind. So before we go on as a small Committee of a comparatively small Society, as engineers are now numbered in societies, I want to feel that the engineers here to-day think that every effort should be put forth by our Committee of four to endeavor to get an engineer appointed to this Commission.

There are in prospect in the very near future three appointments, and the time is short. It is difficult indeed to know even what committees have been appointed throughout the country—our own Acting Secretary cannot inform me on that point. So you see we are in somewhat of a twilight zone, to say the least. While we are waiting here for the Tellers to report, I would ask whether any one has any suggestion as to how we should proceed, or if we should proceed at all.

THE PRESIDENT.—Discussion of the question suggested by Mr. Hansel is now in order, if any one has any suggestion to make.

ALEXANDER C. HUMPHREYS, M. AM. SOC. C. E.—I would like to say a word on that subject. At the start I might say I think it is the duty of this Society, and of all the engineers of the United States, to strive persistently for just such recognition as is here requested.

I am sorry to hear that Mr. Hansel has found some of his friends do not believe that engineers are qualified to fill these public positions. There are engineers and engineers. Certainly there are some engineers who, being wholly devoted to specific work, would have no sympathy with such an idea, and they would be none too anxious to undertake it; but there are certainly many other engineers who have had a broad training in many branches who are particularly qualified, not to serve as engineers alone, but to serve as members of the Commission.

I can give one instance, from my very broad experience (I am sorry to say) with public commissions. I will not take the time to express my view of public service commissions in general. There are exceptions, of course. On a certain Commission before which I had to appear repeatedly because a company of which I was President was brought before it from time to time without adequate reason, an engineer

finally was appointed. The whole character of its work changed; or rather, it changed as soon as he could, in his quiet way, make his influence felt, as soon as he could prove that he was an honest man and knew what he was talking about. In other words, the men acting as judges had their views distinctly changed because of their association with that engineer, who had benefited by a broad training.

Why does not the work of an engineer qualify him particularly for the work these commissions have to undertake? Is it true that the lawyers are particularly qualified? I believe one thing disqualifies lawyers as a class—they are ready to take any side of any question. I do not think engineers, as a class, are prepared to take even a retainer on a question in which they do not believe, and which they do not believe they can honestly represent. There was a gentleman in this room this morning who could tell a story on this point about a man very high in office whom he tried to retain as a witness.

Now, are the lawyers always correct? Suppose I were to tell you that in one of the most important cases, probably the most important case that ever came before the Courts of the United States—in one department, that is, the gas business—an unanimous opinion of the Supreme Court of the United States says in so many words that it is a well known fact that a cast-iron water main will not stand the pressure measured by a column of water $2\frac{1}{2}$ in. high. A great many of you would say "Humphreys has misread that; he has not stated it accurately." I carried that portion of the opinion in my pocket for two or three years, and I have discussed this opinion with one member of that Court. I told him he could make a pretty experiment by taking the thinnest drinking glass he could get, and have his butler fill it almost to $2\frac{1}{2}$ in., and then fill it to $2\frac{1}{2}$ in.—and then, of course, it would break, because cast iron would break and consequently glass, being weaker, would surely break. He told me to go to—.

Seriously, gentlemen, I do hope that this matter is going to be taken up effectively. I cannot conceive that the majority of engineers in this country would feel in any way other than that we ought to be represented on these public bodies. I think it is because we do not consider the questions seriously enough that more engineers are not appointed. We are certainly going to push it in the American Institute of Consulting Engineers. We are going to push it to the limit. We have done a great deal of work in that regard already, and I sincerely hope that the Chairman of this committee will be prepared to go forward enthusiastically.

THE PRESIDENT.—Is there any further discussion of this question?

MR. HANSEL.—If nobody else wishes to discuss it, I would like to add a word. I should have said that Engineering Council had done a great deal of work on this issue that you probably do not know anything about. It was done in an orderly manner, and I thought in a very forceful manner, although it did not happen to succeed.

I did not mean to say that an engineer was not qualified for this work; but I questioned whether he is any better qualified, whether he has any ground for claiming that engineers as a class have been so interested in public affairs, that they have given up so much of their time that they should command the general esteem for their work in public affairs? The engineer is esteemed as a technical man, but I regret to say that I believe he is not particularly esteemed as a public servant because he has not served.

The question that I want to know is, if we go forward—and I shall endeavor to do so to the best of my ability—how shall we get in touch with the other engineering societies? I asked your President before we adjourned if he would be kind enough to ask members of any committee appointed by any engineers' club, any engineering society, or any technical society that had taken up this matter, to meet me during the adjournment over the noon hour. Two gentlemen came to me—one was from Kansas City, Mo., and had just been elected President of the Engineers' Club there, which had a committee under consideration. He said, "Of course, the very important thing is to know whom we shall suggest to the President."

Now, I cannot suggest how we can co-ordinate all the engineers of the United States into a concentrated effort to get some one particular man before the President. Our Acting Secretary is unable to help us in any degree because he does not know, and I do not see how he could know, about these committees that have been appointed, because he is not advised of them. These engineers' clubs and various engineering societies do not advise him of those general activities.

I thought I would take this opportunity, when there was nothing else of greater importance before the meeting, to urge you to get busy with each of your societies and help to get co-ordinated on this subject.

THE PRESIDENT.—Is there any further discussion of this question, or any other question any one desires to bring up? One of the interesting developments of recent years, along technical and commercial or civic lines, is the building of improved roads throughout the country. A vast sum of money has been spent, and a vast sum of money is now available to be spent, in the construction and improvement of new roads. The demand for good roads is almost overwhelming. The amount of money to be spent is very large, and it is a question in which engineers should take an active and prominent part.

There are various societies and organizations which have been taking it up. The United States Government has in progress some research work on this question. The American Society of Civil Engineers has been repeatedly requested to take some part in it, but there are so many engaged therein that it seemed difficult to undertake anything that would not be a duplicate of something else, and possibly arouse antagonism, and do as much, or more, harm than good.

For the past year or two the Society has had a Special Committee on the subject of highway engineering. That Committee finds that its operations are somewhat hampered in two ways, one in the way that I have described, one because so many people are dabbling with the question—and some of them very usefully, I do not mean to say that in any discourteous or disparaging sense—but the demand is insistent on the part of some of our members that we take a more active part.

This matter, with a strong argument from one of our members, was referred recently to the Committee on Special Committees, and one who explained this question very lucidly to the Board of Direction is here. I would like to have Vice-President Metcalf, and Acting Chairman of the Committee on Special Committees, explain to this meeting the situation in regard to the Society's relations to the improvement of public roads, in view of the fact that our membership and the Board of Direction, and all of us, are anxious to contribute to this very notable field of activity, where much money is being, and promises to be, wasted unless some

co-ordination and better line of construction can be adopted than that used in the past.

Mr. Metcalf, is it asking too much to request you, for the information of this meeting, to repeat what you stated to the Board of Direction?

RELATION OF SOCIETY TO HIGHWAY ENGINEERING INVESTIGATIONS.

MR. METCALF.—I shall be very glad to do it, Mr. President and Gentlemen. I will ask the Acting Secretary to get the final conclusions reached by the Committee, in order that I may state them more concisely to you than I can extemporaneously.

The suggestion came from J. B. Lippincott, M. Am. Soc. C. E., of Los Angeles, Cal., that it would be highly desirable for this Society to take the matter in hand actively, to carry on an investigation in such a way as to assist different parts of the country to get the benefit of the work which had been done in other places. He brought home to us in a few admirable words the large sums of money which had been appropriated and which were being expended, the disastrous experience which had been had in various communities, citing his own State, for instance, in which long-term bonds had been issued for the construction of certain highways that had gone to pieces in a comparatively few years, or at all events, which under the traffic conditions they had had to bear and to which they were not suited, had broken down to such a degree as to require very important expenditures to make them usable.

That same thing, of course, has happened in various parts of the country. Although the Board of Direction had faced this problem two years ago and had gotten into touch with a large number of members of the Society best informed on this subject, it had concluded at that time that it was wiser not to attempt to go into the research field, by reason of the very heavy expense involved, and in the belief that such work should be taken up by the Government and municipalities. The Board therefore appointed a Committee which should keep the membership in touch with what was going on, how to find information, etc., but it seemed desirable to approach this subject anew, with an open mind, to see whether a time had now arrived when it would be advantageous for this Society to take up the matter.

It was then referred to the Committee on Special Committees, and in the absence in Hawaii of Mr. John W. Alvord, Chairman, it fell to the lot of Dean Anson Marston and myself to investigate the question. Dean Marston was well informed on the question; I, unfortunately, was not. I felt I was not in a position to pass personal judgment, and following the past precedent of the Committee on Special Committees, I sent a questionnaire, a comparatively large number of letters—some forty-five or so—to different men in this country who were dealing actively with this problem, some in State employ, some in Government employ, some in private practice. I also asked certain of these men if they would kindly suggest the names of others with whom I should get in touch in order to come to a fair understanding of what was being done.

The time was very short in advance of the meeting of the Board of Direction; but I am glad to say that we received enough replies in answer to the questionnaire which I had sent out to get a clear consensus of opinion. The questionnaire, in

substance, asked the questions: Whether this Society should now proceed to take an active part in this work, either alone, or in co-operation, as the men addressed might think desirable? Whether information was being assembled at the present time by other agencies to such an extent that it would be wiser for the Society not to get into the field except to the extent of giving active moral, and, so far as possible, financial support?

I wish you might all have seen the letters that came to us from the members of the Society who were good enough to meet this very important question in a thoroughly constructive way. Among them were two that I shall be very glad to read to this meeting, if time will permit, because I think they will interest you very much, as they did the Board of Direction. The consensus of opinion clearly seemed to be that the matter was already so far along, in the hands of the National Research Council and the U. S. Department of Public Roads of the Government, and certain other highway agencies, such as the Association of State Highway Commissioners, and so much money was involved in the carrying out of research work on this problem, that it was wiser that the Society should limit its activities to co-operation with the existing agencies, and not to enter into the field independently.

The report, therefore, that the Committee on Special Committees recommended to the Board, which is a brief one, summed up the matter in this way:

(Mr. Metcalf read the report* of the Committee.)

The Board of Direction approved this report of the Committee, and adopted it.

Before reading these letters, may I be permitted to say that the difficulty is a very serious one, for the following reasons: Heavy expenditures are going on at this present time, new expenditures, appropriations and new contracts are being made from month to month; and it is undoubtedly true, as Mr. Lippincott states, that mistakes are being re-enacted in different parts of the country.

Men interested in these problems, as Mr. Lippincott and his friends from the West were, go to Washington and attempt to get specific advice from the Road Department, but find it impossible to do so. They are given the benefit of seeing the records that have been established, or the experimentation done to date, I believe; but the difficulty is that the men who are experimenting feel—and it is a fact, of course—that they are at the beginning of their experiments. Much work has been done, but it is not yet safe to draw final conclusions, and these authorities naturally feel that in a matter of this sort a Government Board or Bureau is in great danger if it makes preliminary suggestions.

It does seem, however, as if here were a case where the situation would be helped if we could have what might be called an educated guess from these authorities on the basis of the results thus far obtained, which might aid in preventing unwise action; statements from time to time of the trend of thought and evidence.

Thus far such guesses have not been forthcoming. This leads, of course, to the question as to whether, economically, we are not making a mistake in pushing, blundering, ahead too rapidly. There are various agencies, of course, such as manufacturing establishments interested in road machinery and proprietary articles used in the building of highways, and the automobile interests, which are actively pushing the advance of the highway problem.

* See page 158.

It may be wiser for the States to call a halt on expenditure for new roads, to counsel postponement, in the light of the present financial condition of the country, of some of these expenditures, until it shall be not only in a better financial position, but more important still, until it can be decided what it is really wise to do in the design of road sections and materials.

One of the important things, I judge from these letters, is the necessity of making some decision as to the kind of traffic which shall be permitted on the roads, and deciding the question of the size of trucks. Up to this time there has been no well co-ordinated action.

Shall I read these letters, sir?

THE PRESIDENT.—Just as the meeting desires. If there is no objection, these letters will be read; they are very interesting.

MR. METCALF.—The first of these letters is from Hunter McDonald, Past-President, Am. Soc. C. E., who wrote under date of January 12th, 1921, as follows:

"NASHVILLE, TENN., JANUARY 12TH, 1921.

"MR. LEONARD METCALF,
"14 BEACON STREET,
"BOSTON, MASS.

"DEAR SIR.—Answering yours of January 4th, requesting expression of opinion from me on certain matters connected with duties of the present Highway Committee of the American Society of Civil Engineers, the answers given below refer to numbers on the second page of your letter.

"1.—I do not think the duties of the Highway Committee should be extended to cover the investigation, correlation and annotation of experience with road materials of different kinds in different parts of the country. I think the Bureau of Public Roads is the proper body to undertake this work, and my information is that it has already made considerable advance along these lines. I believe it has the best opportunity, since it has command of funds and apparatus which are not available to a committee of our Society.

"2.—I do not think the duties of the present Highway Committee should be extended to cover investigation of road materials of different kinds and character to be found in different parts of the country. This would be found an interminable work on account of the great variety of local conditions and materials found in such localities as well as the traffic to be taken care of.

"3.—I do not think the duties of the present Highway Committee should be extended to cover a report upon the probable length of life of different road materials under different traffic conditions. I believe this information should be collected by the Bureau of Public Roads, although I believe the Committee should undertake to keep in touch with the investigations of this Bureau and report the same.

"4.—I am not advised of the work being done by the National Research Council along the lines above mentioned. My belief is that if the Council is undertaking this work, the result will be a very decided duplication which should be avoided, if possible.

"5.—I do not think the work outlined in Paragraphs 1 to 4 can be effectively done by a committee of this or any other Society on account of the lack of financial and physical resources to make a proper investigation of the matter.

"6.—I do not think the enlarged work outlined in Paragraphs 1 to 4 should be undertaken by the Society even if financial assistance can be secured from the Government. However, the Committee should keep in touch with the work being done by the Bureau of Public Roads to place themselves in position to make suggestions from time to time as to the scope of investigations which may be under-

taken by the Bureau and advise our members from time to time as to results which are being secured.

"I recently spent four days in listening to the discussions of the American Association of Highway Officials at the meeting held in Washington, D. C. A large number of the highway engineers present were members of the American Society of Civil Engineers, and many of them presented very valuable opinions and reports upon investigations which have been made under their jurisdiction.

"I visited the experimental work on durability of paving materials under variable physical conditions which was being carried on at Arlington under direction of the Bureau. I found much which would interest highway and railroad engineers. I was particularly interested in the different phases of the problem which confronts the highway engineer in New England and Wisconsin.

"It appears that the general conception of the State Highway Commissioner, and probably the Director of the Bureau, is that the highway must be so constructed and maintained as to be always in a condition not only to relieve railroads in time of congestion, but to take over a large part of the railroad tonnage, particularly that involving only a short haul.

"It was pointed out that when trucks were heavily loaded, one passage over a highway might destroy for all time to come the hard surface which may have been built at tremendous expense. On the other hand, the representatives from Wisconsin contended that they did not wish to build highways which would withstand such loads, that their problem was to furnish the inhabitants of that State as promptly as possible with some means of traversing a country which, without improved roads, was practically impassable. They advocated the cheapest form of surface which would be passable for light vehicles.

"It seems to me that there is a splendid field for work of a Highway Committee of our Society in directing the attention of the public to the fact that no necessity exists for burdening the highways with loads which can and should be transported by rail, that money spent for highways which parallel railroads is largely for the benefit of the pleasure seeker and does not result in the greatest aid to our agricultural and manufacturing interests. Highways which are designed to bring traffic to the railroads are the kind which will most benefit the people who pay the taxes. I have no doubt but that the railroads would be glad to be relieved of their short-haul traffic, which is usually unremunerative and can frequently be moved to greater advantage on highway trucks.

"However, the general public should not be taxed to build highways capable of carrying such traffic, and the trucks which impose the burden should bear the additional expense necessary to render the highway capable of carrying such traffic. The pleasure tourist should bear the principal burden of constructing and maintaining long highway routes which are useful principally to those who are in position to enjoy them.

"The automobile industry and their sales organizations are in my opinion the most potent influences at present engaged in perfecting our system of good roads. It is no doubt a commendable enterprise, but certainly there can be no economy in burdening the country with bonds payable within fifty years to build roads, the greater part of which will have to be rebuilt in ten years. The luxury of good roads should be paid for by the people who enjoy them.

"It may be argued that the problems above referred to are those of the political economist and not of the engineer. My answer is that the political economist will be lost without the advice of the engineer on such subjects. It may be also argued that my views are biased on account of my predilection for railroad interests. I confess to having a very decidedly good opinion of the ability of the railroads to care for their appropriate traffic, and any failure which they may have shown in the past has been due to conditions imposed by circumstances utterly beyond control of those in charge of the railroads, and I am firmly convinced that if it were feasible to control the speculative habits of our citizens, traffic congestion at ports, resulting in idle cars and consequent failure to move traffic, would be greatly lessened.

"I think there is a field for the Highway Committee suggested in the above remarks, which, if studied conscientiously would develop much more beneficial results to the public at large than the study of the technical details of road building materials.

"I would suggest that you endeavor to secure a copy of the proceedings of the meeting referred to above, which I presume you can do, whenever they are published, by application to the Chief of the U. S. Bureau of Public Roads, Mr. Thomas H. McDonald.

"Very truly yours,

(Signed) "HUNTER McDONALD."

It is fair to add that Mr. McDonald had no idea that his letter would be used in this way, and that he would, as he has stated to me, have wished to go over it and possibly redraft it. It seems to me, however, that it is an admirable letter just as it stands.

The other letter is from John M. Goodell, Assoc. Am. Soc. C. E., former Editor of *Engineering Record*, who has had a very large experience in this field. For some years he has been connected with the Bureau of Public Roads of the U. S. Government, and has also carried on special investigations for certain of our highway associations, and is, I think, one of the best informed men in this field in the country.

"JANUARY 14TH, 1921.

"MR. LEONARD METCALF,

"BOSTON, MASS.

"DEAR MR. METCALF.—Before answering your specific inquiries in your letter of January 4th about the desirability of appointing a new Highway Committee of the American Society of Civil Engineers, I wish to make a preliminary statement, as follows:

"The confusion in the highway field to-day is due to failure to realize that road engineering is merely one part of a single big economic problem, namely, transportation of persons and goods over roads. Roads are but one group of factors to be considered, for vehicles offer even greater problems, and the economic problems are wholly different and, in these days of readjustment, transcend the engineering problems.

"Personally, I am opposed to any further substantial investment in extensive highway improvements until it can be shown that: (1) the investment is warranted by economic conditions and will be protected against destruction by destructive travel for which the construction is unsuited; or, (2) the construction is suitable for the heavy travel already certain to come on the given road. I am completely opposed to the claim that roads should be built to carry a few excessively heavy trucks, when much less expensive construction is suitable for all other travel for years to come, for it seems to me a waste of public funds for the benefit of a very few. In short, the economic features are much more important, in our present financial condition, than the engineering features.

"Answering your specific inquiries:

"1.—There are to-day ample facilities and agencies, notably the Bureau of Public Roads, to cover the investigation, collation and annotation of experience with road materials everywhere in the country. The proposed work is expensive if well done, and there is no need for the American Society of Civil Engineers to enter a field already well cultivated.

"2.—The present Highway Committee should not undertake the investigation of road materials found in this country. This is now done by the Bureau of Public Roads with the co-operation of all State Highway Departments, and an enormous mass of data has been collected.

"3.—The present Highway Committee is not, and cannot be put, in a position to gather better information regarding the reasonable life of road materials than is now being gathered by the Association of State Highway Officials and the Bureau of Public Roads, in co-operation.

"4.—I believe the Society can use its funds to the greater advantage of its members as a whole in other ways than co-operation in the road research of the National Research Council.

"5.—I strongly oppose paying a cent to the Research Council.

"6.—The Bureau of Public Roads will be glad to secure the co-operation of this Society in the work it is authorized by Congress to perform, but it will tend to hurt that Bureau's valuable service for the American Society of Civil Engineers to appeal to Congress for road-investigation funds.

"Very truly yours,

(Signed) "JOHN M. GOODELL."

I owe it to Mr. Goodell to say that this was a personal letter to me, and perhaps I am overstepping my personal privilege in presenting it in the manner that I have done; but it seemed to me that it was a matter of such importance, and he has put his point of view so admirably that you would all be interested in it.

In this connection, it is interesting to note a fact which was brought to the attention of the Board of Direction, that at present certain of our colleges are giving short courses during the Winter for men interested in this field—in some cases giving collegiate credit for it, and in other cases giving no credit for it. A very interesting experiment is shortly to be tried by Prof. Milo S. Ketchum, of the University of Pennsylvania, a Director of this Society, in calling a convention of highway engineers in connection with such a school, to the support of which the State has co-operated in a very cordial way by sending apparatus and men; the U. S. Government is doing likewise, to demonstrate the latest methods and viewpoints, and to give those who attend the school the advantage of a brief, intensive course in this field of activity.

It does seem to me, in conclusion, that this is a matter of the utmost importance, not only to engineers, but, in a greater degree, to the public at large; and it is one in which the new Board of Direction can, and I think undoubtedly will, take a very sincere interest.

RESULTS OF BALLOT FOR OFFICERS.

THE PRESIDENT.—The Chair wishes to extend thanks to Vice-President Metcalf for his lucid explanation of this very important subject.

It is now the duty of the Chair, under the Constitution of the Society, to announce the result of the Annual Election. This report which I have in my hand is signed by F. B. Church, Chairman, and the 44 other Tellers as appointed, and is as follows:

"33 WEST 39TH STREET, NEW YORK, N. Y.,
"January 19th, 1921.

"TO THE SIXTY-EIGHTH ANNUAL MEETING,
"AMERICAN SOCIETY OF CIVIL ENGINEERS:

"The Tellers appointed to canvass the ballots for Officers of the Society for 1921 report as follows:

"Total number of ballots received.....		7189
"Deduct		
Ballots from members in arrears of dues.....	122	
" with lettered instead of written signature.....	4	
" with unidentified signature.....	1	
" from persons not members.....	15	
" from Juniors and Associates.....	11	
" unsigned	28	
Blanks	0	
Total number not entitled to vote.....		181
Ballots canvassed		7008
"For President:		
GEORGE S. WEBSTER.....	4036	
J. WALDO SMITH.....	2819	
Scattering	0	
"For Vice-Presidents:		
ANDREW M. HUNT.....	3947	
EDWARD E. WALL.....	4003	
ALLEN HAZEN.....	2947	
FRANK G. JONAH.....	2791	
Scattering	4	
"For Treasurer:		
OTIS E. HOVEY.....	4093	
ARTHUR S. TUTTLE.....	2793	
Scattering	0	
"For Directors:		
District No. 1	JOHN P. HOGAN.....	6243
	IRA W. MCCONNELL.....	4052
	ROBERT S. PARSONS.....	2740
	Scattering	11
District No. 4	RICHARD L. HUMPHREY.....	4001
	HARRY A. LANE.....	2499
	Scattering	0
District No. 9	BAXTER L. BROWN.....	3883
	ALEXANDER MAITLAND, JR.....	2609
	Scattering	0
District No. 10	FRANK T. DARROW.....	6689
	Scattering	9
District No. 11	GEORGE G. ANDERSON.....	4046
	RICHARD D. PARKER.....	2538
	Scattering	9
"F. B. CHURCH, <i>Chairman</i> ,		
"C. S. BILYEU,	"B. C. DONHAM,	
A. W. CARPENTER,	W. A. E. DOYING,	
CLEMENT E. CHASE,	BOYD EHLE,	
W. T. CHEVALIER,	TORRIS EIDE,	
W. H. CHORLTON,	A. C. EVERHAM,	
C. E. CONOVER,	J. F. FAIRCHILD,	
B. L. CUSHING,	S. E. FAIRCHILD, JR.	
R. DE CHARMS, JR.	FELDER FURLOW,	
IRVING DEMAREST,	R. R. GRAHAM,	
H. S. DEVLIN,	W. G. GROVE,	

"N. C. GROVER,	"B. B. PRIEST,
H. P. HAMMOND,	P. J. REICH,
GEORGE P. JAMES,	SAMUEL I. SACKS,
J. M. JOHNSON,	J. A. SARGENT,
C. A. McCULLOUGH,	L. H. SHOEMAKER,
A. B. McGREW,	F. L. STEARNS,
F. R. McMILLAN,	J. S. SWINDELLS,
DAVID MERIWETHER, JR.,	A. TRAVERS-EWELL,
F. H. NEWELL,	H. S. VAN SCOYOC,
C. W. OGDEN,	J. E. WADSWORTH,
GEORGE PAASWELL,	J. J. WALKER,
GEORGE PERRINE,	T. S. WILLIAMS,

"Tellers."

(The President announced the election of the Members having the highest votes for the respective offices.)

MR. FULLER.—I desire to move that Messrs. J. Waldo Smith and Allen Hazen be accorded the privilege of serving on the customary Committee of Two to escort to the platform our new President, Mr. George S. Webster.

MR. WILLIAMS.—I second the motion.

THE PRESIDENT.—Those in favor of the motion signify by saying "aye"; contrary, "no". The "ayes" have it. Mr. Smith and Mr. Hazen are appointed to escort the President-elect to the platform.

I wish to say that Mr. Smith said to-day that he would enjoy this office very much better than the reverse.

GEORGE S. WEBSTER, PRESIDENT, AM. SOC. C. E.—Gentlemen, I can hardly find words to express my appreciation of your vote in electing me President of this Society. Every engineer must realize that this is the greatest honor that can come to a member of our Profession. From my acquaintance with the management of the Society, as Director and as Vice-President, and my knowledge of the personnel of the incoming Board of Direction, I am convinced that the affairs of the Society, and the questions which have come before it during the past year, will receive careful, deliberate consideration, and that they will be disposed of, and the problems solved, in a manner that will be to the best interests of the American Society of Civil Engineers, and for each one of its members.

It is especially gratifying to hear from the Past-President, Mr. Davis, the attitude of the Board of Direction on the problems confronting us; and I also appreciate being escorted to the Chair by Mr. Smith and Mr. Hazen, I feel that it assures to the incoming administration the sympathetic support of all the members, and with that support we will use our best endeavor to advance the interests of the Society.

I feel that this is no time for me to make an address. My turn will come later. But I wish again, before taking my seat, to express to you the high appreciation that I feel in being elected to this office, and my gratification for the assurance from the members of their support in carrying out the work that will be entrusted to me.

MR. FULLER.—This morning I was impressed with the very fair-minded and efficient manner in which our business meeting was presided over by Past-President Davis. When we adjourned for luncheon it gave me a good deal of satisfaction

to welcome Mr. Davis and compliment him on the very efficient manner in which he had presided.

I desire to have the records of this meeting show publicly my appreciation, and to make a motion that this meeting record its appreciation of the manner in which Past-President Davis has presided.

(Motion duly seconded.)

PRESIDENT WEBSTER.—I assure you, Mr. Davis, that it is with great pleasure that I put this motion. Gentlemen, you have heard the motion. We shall put it to a rising vote. Mr. Davis, the vote is unanimous.

PAST-PRESIDENT DAVIS.—Mr. Chairman, just one moment. I desire, gentlemen, to thank you most profoundly for this courtesy, and to express to you my thanks and appreciation for the indulgence and co-operation that have been accorded to me on every occasion on which I have presided over the meetings of the American Society of Civil Engineers and its Board of Direction.

In all the differences that have arisen there has been in these bodies no thought on my part, and I think I can say on the part of others, of anything of a personal nature, or of personal resentment or antagonism of any kind; and I can hope for no greater future success in that line than that this will continue in the future as in the past.

I thank you most profoundly for your courtesy.

PRESIDENT WEBSTER.—The Acting Secretary informs me that there will be a meeting of the Board of Direction immediately upon the adjournment of this meeting, on the Fifteenth Floor.

Is there any further business, gentlemen, to come before the meeting?

(A motion to adjourn was duly seconded and carried, and the President declared the meeting adjourned.)

**EXCURSIONS AND ENTERTAINMENTS
AT THE SIXTY-EIGHTH ANNUAL MEETING**

Wednesday, January 19th, 1921.—During the recess of the Business Meeting, between 1.30 and 2.30 p. m., luncheon for about 800 was served on the Fifth Floor of the Engineering Societies Building.

After the final session of the Business Meeting, the members were offered the choice of five trips to various points in the city, described in a small folder issued for their information, which many attended as follows:

Trip No. 1.—About 35 members selected the trip to the Experimental Laboratories of the Western Electric Company, 463 West Street, where they inspected the research work in connection with the Bell Telephone System done by the Engineering Department, and also in co-operation with the Department of Development and Research of the American Telephone and Telegraph Company. Through the courtesy of F. B. Jewett, Chief Engineer, special demonstrations were arranged, and the visitors were conducted over the interesting parts of the laboratories.

Trip No. 2.—Four members selected the trip to the Surveying and Engineering Instrument Factories of the Keuffel and Esser Company, 3d and Adams Streets, Hoboken, N. J., where they were shown the methods of manufacturing optical glass, the grinding and polishing of lenses, and the processes of manufacture and adjustment of range finders, of periscopes and of engineering and surveying instruments.

Trip No. 3.—About 500 members and guests visited the Fox Film Corporation Motion Picture Studios and Laboratories, 55th Street and Tenth Avenue. They were shown the largest motion picture plant under one roof in the world, the two large stages used in the production of moving picture scenarios, and also the dressing-rooms, the studios where twenty companies can work simultaneously, the laboratories for scientific research, and the large administrative offices.

Trip No. 4.—About 15 members selected the trip to the Fletcher's Castoria Company Building, Varick and Grand Streets, and the warehouse of the Western Electric Company at Hudson and West Houston Streets, the latter being about the largest concrete building ever erected on Manhattan Island.

Trip No. 5.—Eight members visited the Long Distance Telephone Exchange of the American Telephone and Telegraph Company in the Walker-Lispensard Building, 24 Walker Street, where they inspected the large switchboards, the provisions made for training new operatives, the practice switchboards, lecture and reception rooms, rest and lunch rooms, and emergency hospital facilities.

At 9 p. m. there was a reception to the President in the Grand Ball Room at Delmonico's, 44th Street and Fifth Ave., followed by dancing, at which about 240 members and guests were present.

Thursday, January 20th, 1921.—In accordance with the plans of the Committee of Arrangements, issued in a pamphlet distributed to the members, the day was devoted to an inspection trip which included an excursion to Long Island City, luncheon at the Metropolitan Life Insurance Company Building followed by an address by its President, Mr. Haley Fiske, and inspection of the "human engineering" activities of the Company.

Buses were provided to carry the members and guests to the number of about 575, who left the Engineering Societies Building at 9.45 a. m., for the trip to Long

Island City. The various points of interest along Fifth Avenue were pointed out, the party passed over the Queensboro Bridge, from which a view of the Hell Gate Bridge was obtained, and was shown the Sunnyside Yard of the Pennsylvania Railroad.

In Long Island City the party was divided into small groups, which were led by competent guides through various buildings as follows:

1.—The Loose-Wiles Biscuit Company Building, which is the largest bakery building in the world, occupying an area 430 by 200 ft., and is of reinforced concrete, ten stories high. The machinery and methods used in the production of 360 kinds of biscuits and crackers were described.

2.—The Ever-Ready Works of the Union Carbide and Carbon Company, erected in 1914, where normally 1 800 people are employed, and where the processes for the production of over 30 000 flashlights and 150 000 batteries per day were inspected.

3.—The factory of the American Chicle Company, which has just been completed, and in which the use of concrete embellished with tile for the exterior finish, and the general process of manufacturing chewing gum, were explained. The capacity of this plant, when on full production, is 250 000 000 pieces of chewing gum per week.

On the return trip the Metropolitan Life Insurance Company's new printing building was inspected, the attention of members and guests being drawn to the unusual design of the all-concrete exterior. The very large floor areas, divided by means of concrete fire curtains suspended 3 ft. from the ceiling for the purpose of confining heat to the sections where the fire originates, to cause prompt operation of sprinkler heads, were pointed out as a special feature of the building. The points of interest along Park Avenue and Fourth Avenue were described, and on arrival at the Metropolitan Life Insurance Building, the party passed through the recently completed new annex on the northeast corner of Madison Avenue and 24th Street. About 810 members and guests were present at a luncheon given by the Metropolitan Life Insurance Company and listened to a most enlightening address by President Fiske, who explained in detail the many activities of the Company, and the special provisions for the health, recreation, and general welfare of its employees. Moving pictures of the Sanatorium built by the Company in the northern part of New York State, were shown.

The party was divided into small groups, which were conducted to all the various points of special interest in the building, including the dance hall, dental clinic rooms, commissary department, filing rooms, card-selection and punching machine room, hospital facilities, etc.

At 8.30 P. M., in the Auditorium of the Engineering Societies Building, Mr. Francis H. Sisson, Vice-President of the Guaranty Trust Company, New York City, delivered an interesting address on "The Engineer, His Future and Relation to the Economic Life of America". About 800 members were present, and following the address there was a social and an informal Smoker on the Fifth Floor.

The following list contains the names of 1 087 members of various grades who registered as being in attendance at the Annual Meeting. The list is probably incomplete, as some members failed to register, and it does not contain the names of any of the guests of the Society or of individual members. It is estimated that the total attendance was about 1 250.

ATTENDANCE AT ANNUAL MEETING.

Abbott, C. P.....	White Plains, N. Y.	Baldwin, W. J., Jr....	New York City.
Abbott, H.....	New York City.	Balleisen, L. L.....	New York City.
Adams, E. G.....	New York City.	Ballinger, W. F.....	Philadelphia, Pa.
Aertsen, G.....	Philadelphia, Pa.	Bamford, W. B.....	Belmar, N. J.
Aikenhead, J. R.....	Rutherford, N. J.	Baptiste, E. E.....	Jersey City, N. J.
Albert, F. W.....	Washington, D. C.	Barnes, F. E.....	New York City.
Alexander, A.....	New York City.	Barnes, T. H.....	New York City.
Alexander, H. J....	White Plains, N. Y.	Barnett, R. P.....	New York City.
Allaire, A.....	New York City.	Barney, S. E.....	New Haven, Conn.
Allen, C. F.....	West Roxbury, Mass.	Barney, W. J.....	New York City.
Allen, C. M.....	Worcester, Mass.	Bartoccini, A.....	New York City.
Allen, E. Y.....	New York City.	Bascome, W. R.....	New York City.
Allen, F. W.....	Mt. Vernon, N. Y.	Basinger, J. G.....	New York City.
Allen, H. D.....	Newark, N. J.	Bassett, E. M.....	Philadelphia, Pa.
Allen, K.....	New York City.	Bassett, W. A.....	New York City.
Allen, W. A.....	Perth Amboy, N. J.	Baucus, W. L.....	North Adams, Mass.
Ammann, O. H....	South Amboy, N. J.	Beahan, W.....	Cleveland, Ohio.
Anderberg, E.....	New York City.	Bean, E. D.....	White Plains, N. Y.
Anders, D. W.....	Philadelphia, Pa.	Bean, G. L.....	Philadelphia, Pa.
Anderson, B. B.....	Brooklyn, N. Y.	Beaty, R. E.....	Brooklyn, N. Y.
Anderson, G. G.....	Los Angeles, Cal.	Becker, R. C.....	New York City.
Andrews, G. C.....	Buffalo, N. Y.	Bedell, F. C.....	New York City.
Appleton, T. A.....	Beverly, Mass.	Beebe, H. R.....	Utica, N. Y.
Archer, A. R.....	Port Washington, N. Y.	Beerbower, D.....	New York City.
Archibald, W. M.....	New York City.	Belcher, W. E.....	New York City.
Armstrong, A. F.....	Albany, N. Y.	Belden, E. T.....	Englewood, N. J.
Armstrong, R. W.....	Waltham, Mass.	Belknap, J. M.....	New York City.
Arnold, B. J.....	Chicago, Ill.	Bell, J. C.....	Elmhurst, N. Y.
Ash, W. J.....	Newark, N. J.	Bellows, O. F.....	New York City.
Ashbridge, R. I. D..	E. Downingtown, Pa.	Belmont, F. E.....	New York City.
Atkinson, A.....	New Brunswick, N. J.	Belzner, T.....	Brooklyn, N. Y.
Atkinson, G.....	New York City.	Bensel, J. A.....	New York City.
Atwater, H. C.....	New York City.	Bentley, J. C.....	Elizabeth, N. J.
Atwood, T. C.....	Durham, N. C.	Benzenberg, G. H....	Milwaukee, Wis.
Atwood, W. G.....	New York City.	Berle, K.....	Brooklyn, N. Y.
Austin, W. E.....	New York City.	Bertin, R. L.....	New York City.
Averill, J. L.....	Newark, N. J.	Besselièvre, E. B....	Spring Lake, N. J.
Aylett, P.....	New York City.	Beswick, J. E.....	New York City.
		Bettes, Chas. R.....	New York City.
Babcock, W. S.....	New York City.	Beugler, E. J.....	New York City.
Baird, H. C.....	New York City.	Bilyeu, C. S.....	New York City.
Baker, F. A.....	New York City.	Binger, W. D.....	New York City.
Balcomb, J. C.....	New York City.	Bissell, C. T.....	New York City.
Baldwin, A. S.....	Chicago, Ill.	Blackwell, P. A.....	Roanoke, Va.
Baldwin, E. H.,		Blair, A.....	Millington, N. J.
	Cornwall-on-Hudson, N. Y.	Blair, C. M.....	New Haven, Conn.

Blakeslee, H. L.....	New Haven, Conn.	Brumley, D. J.....	Chicago, Ill.
Bleistein, B. J.....	Astoria, N. Y.	Brush, W. W.....	New York City.
Bluhm, H. W.....	Richmond Hill, N. Y.	Bryan, C. W.....	New York City.
Boardman, C. S.....	Buffalo, N. Y.	Buck, G. H.....	Elizabeth, N. J.
Boardman, H. E.....	New York City.	Buck, H. R.....	Hartford, Conn.
Boardman, H. S.....	Orono, Me.	Buck, R. S.....	New York City.
Boardman, W. H.....	Newark, N. J.	Buel, A. W.....	New York City.
Bogardus, J. S.....	Mount Vernon, Ohio.	Buettner, O. G.....	New York City.
Bogart, J. L.....	Glen Head, N. Y.	Burdett, F. A.....	New York City.
Bogert, C. L.....	New York City.	Burpee, G. W.....	New York City.
Boller, A. P.....	East Orange, N. J.	Burr, W. H.....	New York City.
Bond, E. A.....	Castleton, N. Y.	Burroughs, H. R.....	New York City.
Boniface, A.....	Scarsdale, N. Y.	Burrowes, P.....	Englewood, N. J.
Bontecou, D.....	Mamaroneck, N. Y.	Bush, H. D.....	Baltimore, Md.
Boorman, K. M.....	New York City.	Bush, L.....	East Orange, N. J.
Booth, G. W.....	New York City.		
Borough, E. W.....	New York City.	Cadwallader, W. L.....	New York City.
Boucher, W. J.....	New York City.	Campbell, C. C.....	Philadelphia, Pa.
Bouton, H. R.....	Norwalk, Conn.	Campbell, R.....	Pottstown, Pa.
Bowers, G.....	Lowell, Mass.	Canaga, G. B.....	Philadelphia, Pa.
Boyden, H. C.....	Chicago, Ill.	Carey, G. J. F.,	
Brackenridge, J. C.....	New York City.		Cold Springs-on-Hudson, N. Y.
Bradley, F. E.....	New York City.	Carmalt, L. J.....	New Haven, Conn.
Brainard, A. S.....	East Orange, N. J.	Carpenter, A. W.....	New York City.
Bramwell, G. W.....	New York City.	Carpenter, C. E.....	Yonkers, N. Y.
Braunworth, P. L.....	Newark, N. J.	Carstarphen, F. C.....	Trenton, N. J.
Breck, C. R., Jr.....	New York City.	Casani, A. A.....	New York City.
Breed, H. E.....	New York City.	Case, A. D.....	Woodbury, N. J.
Breitzke, C. F.....	Boonton, N. J.	Casler, M. D.....	Canastota, N. Y.
Brennan, J. G.....	Albany, N. Y.	Castleman, F. L.....	Pencoyd, Pa.
Brennan, J. L.....	New York City.	Chadbourn, W. H.....	New York City.
Breuchaud, J. R.....	New York City.	Chase, C. E.....	New York City.
Brewer, B.....	Waltham, Mass.	Chase, C. F.....	New Britain, Conn.
Brewster, C. V.....	Syracuse, N. Y.	Chase, J. C.....	Derry Village, N. H.
Briggs, B. E.....	Erie, Pa.	Chester, J. N.....	Pittsburgh, Pa.
Briggs, R. W.....	Yonkers, N. Y.	Chevalier, W. T.....	New York City.
Briggs, W. C.....	Brooklyn, N. Y.	Child, S.....	Boston, Mass.
Bringhurst, J. H.....	Stillwater, Okla.	Chorlton, W. H.....	New York City.
Brodie, O. L.....	New York City.	Churchill, J. P.....	Newark, N. J.
Brooks, J. P.....	Potsdam, N. Y.	Clark, A. E.....	New York City.
Brown, L.....	Rochester, N. Y.	Clark, F. J.....	Dobbs Ferry, N. Y.
Brown, L. F.....	Brooklyn, N. Y.	Clark, G. H.....	New York City.
Brown, N. F.....	Philadelphia, Pa.	Clark, W. G.....	New York City.
Brown, T. E.....	New York City.	Clarke, E. W.....	Baltimore, Md.
Brown, W. E.....	Manhasset, N. Y.	Clarke, St. J.....	Bogota, N. J.
		Class, C. F.....	Harrisburg, Pa.

Closson, E. S.....	Montclair, N. J.	Cummings, R. A.....	Pittsburgh, Pa.
Codwise, E. B.....	Kingston, N. Y.	Curtis, C. E.....	Ithaca, N. Y.
Codwise, H. R.....	Brooklyn, N. Y.	Curtis, F. S.....	Boston, Mass.
Coe, D. W.....	New York City.	Cushing, B. L.....	Buffalo, N. Y.
Coffin, T.....	Katonah, N. Y.	Cushing, W. C.....	Philadelphia, Pa.
Cohen, A. B.....	New York City.		
Cohen, H. I.....	New York City.	Dading, C. H.....	Philadelphia, Pa.
Cole, C. L.....	Hartford, Conn.	Daino, A. J.....	New York City.
Cole, G. N.....	New York City.	Dakin, A. H., Jr.....	New York City.
Cole, H. J.....	Ossining, N. Y.	Danforth, G. C.....	Augusta, Me.
Collins, J. J.....	New York City.	Daniells, P. A.....	Greenville, Pa.
Collyer, N.....	New York City.	Darrow, F. T.....	Lincoln, Nebr.
Colyer, C. I.....	Montclair, N. J.	Davies, J. P.....	New York City.
Conant, E. R.....	Winchester, Mass.	Davies, J. V.....	New York City.
Conard, C. K.....	Northport, N. Y.	Davis, A. P.....	Washington, D. C.
Conley, W. A.....	New York City.	Davis, B. H.....	New York City.
Connell, W. H.....	Philadelphia, Pa.	Davis, C. E.....	Philadelphia, Pa.
Connolly, J. A.....	New York City.	Davison, G. S.....	Pittsburgh, Pa.
Conover, C. E.....	New York City.	Dawley, W. M.....	New York City.
Constable, H.....	Kingston, Mass.	Deakman, H. W.....	Brooklyn, N. Y.
Constant, F. H.....	Princeton, N. J.	de Charms, R., Jr...	Jersey City, N. J.
Conway, J. S.....	Washington, D. C.	Delson, I.....	New York City.
Cook, J. H.....	Paterson, N. J.	Demarest, I.....	Millington, N. J.
Cooley, M. E.....	Ann Arbor, Mich.	de Moll, C.....	Philadelphia, Pa.
Coombs, A. W.....	New York City.	Denise, C. M.....	Pittsburgh, Pa.
Coombs, R. D.....	New York City.	Dennett, R. C.....	New York City.
Coombs, S. E.....	New York City.	Develin, R. G.....	Philadelphia, Pa.
Corkran, W. S.....	East Orange, N. J.	Devlin, H. S.....	Brooklyn, N. Y.
Covert, C. C.....	Albany, N. Y.	DeWitt, P. H.....	Newark, N. J.
Cowles, L. S.....	Boston, Mass.	Deyo, S. L. F.....	New York City.
Cox, W. J.....	Baltimore, Md.	Diamant, A. H.....	New York City.
Coyne, H. L.....	Brooklyn, N. Y.	Digby, J. H.....	Havana, Cuba.
Craig, R. H.....	New York City.	Dimon, D. Y.....	New York City.
Crary, A. P.....	New York City.	Disbrow, C. A.....	New York City.
Craven, A. S.....	Philadelphia, Pa.	Dodge, S. D.....	Suffern, N. Y.
Crawford, W. H.....	Philadelphia, Pa.	Donham, B. C.....	New York City.
Creager, W. P.....	New York City.	Donnelly, A. L.....	New Haven, Conn.
Cresson, B. F., Jr....	New York City.	Doriss, H.....	Cranford, N. J.
Creuzbaur, R. W.....	New York City.	Doron, C. S.....	New York City.
Critchlow, H. T.....	Trenton, N. J.	Dougherty, R. E....	White Plains, N. Y.
Crocker, H. S.....	New York City.	Doyen, G. E.....	New York City.
Crooks, C. H.....	New York City.	Doying, W. A. E....	Washington, D. C.
Cuddeback, A. W.....	Paterson, N. J.	Drake, R. E.....	Fulton, N. Y.
Cudworth, F. E.....	Brooklyn, N. Y.	Dresser, G. L.....	Albany, N. Y.
Cummin, H.....	New York City.	Drew, C. D.....	New York City.
Cummings, N.....	Mt. Vernon, N. Y.		

Dunham, H. F.....	New York City.	Forbes, F. B.....	New York City.
Durham, E. M., Jr....	Washington, D. C.	Ford, H. C.....	New York City.
Durham, L.....	Scarsdale, N. Y.	Forgie, J.....	New York City.
Dutton, C. H.....	Providence, R. I.	Fort, E. J.....	Niagara Falls, N. Y.
		Foss, F. E.....	New York City.
Earle, T.....	Bethlehem, Pa.	Foster, E. H.....	New York City.
Easby, W., Jr.....	Philadelphia, Pa.	Fougner, H.....	New York City.
Eckersley, J. O.....	New York City.	Fouilhoux, J. A.....	New York City.
Eddy, H. P.....	Boston, Mass.	Fowler, C. E.....	New York City.
Eden, A. W. A.....	East Orange, N. J.	Fox, W. F.....	Rockville Center, N. Y.
Edwards, D. G.....	New York City.	Frank, A. H.....	Brooklyn, N. Y.
Edwards, W. R.....	Baltimore, Md.	Franklin, C. N.....	Mt. Vernon, N. Y.
Ehle, B.....	East Creek, N. Y.	Fraser, C. E.....	New York City.
Eide, T.....	New York City.	Fraser, E. A.....	New York City.
Elwell, C. C.....	New Haven, Conn.	Freeman, J. R.....	Providence, R. I.
Endemann, H. K.....	New York City.	Freeman, M. H.....	New York City.
English, H. L.....	Washington, D. C.	French, H.....	New York City.
Epple, E. C.....	Bloomfield, N. J.	French, J. B.....	New York City.
Everett, M. R.....	Newark, N. J.	Friebele, J. F.....	Trenton, N. J.
Everham, A. C.....	Kansas City, Mo.	Fuller, G. W.....	New York City.
Evers, R.....	Brooklyn, N. Y.	Fuller, M. E.....	New York City.
		Fuller, W. E.....	New York City.
		Furlow, F.....	Philadelphia, Pa.
Faby, J. A.....	Lakehurst, N. J.		
Fairchild, J. F.....	Mt. Vernon, N. Y.	Gailor, C. F.....	New York City.
Fairchild, S. E., Jr.,	Philadelphia, Pa.	Gardiner, F. W.....	New York City.
Fairlie, J. W.....	Providence, R. I.	Gardiner, J. deB. W...	New York City.
Falk, M. S.....	New York City.	Gardner, H. C.....	Lancaster, Pa.
Farley, J. M.....	White Plains, N. Y.	Gardner, W.....	New York City.
Farnham, R.....	Philadelphia, Pa.	Garfield, C. A.....	Bronxville, N. Y.
Federlein, W. G.	Rockville Center, N. Y.	Gaston, L. P.....	Somerville, N. J.
Fehr, H. R.....	Allentown, Pa.	Gates, G. W.....	New York City.
Fellows, F. J.....	Jamaica, N. Y.	Gautier, R. C.....	New York City.
Ferguson, J. N.....	Boston, Mass.	Gay, F. W.....	New York City.
Ferguson, L. R.....	Philadelphia, Pa.	Gemberling, J. B.....	Philadelphia, Pa.
Files, T. H.....	New York City.	Gendell, D. S., Jr....	Pottstown, Pa.
Finch, J. K.....	New York City.	Gerhard, N. P.....	Scarsdale, N. Y.
Finck, G. E.....	Baltimore, Md.	Gifford, G. E.....	New York City.
Finebaum, H. J.....	New York City.	Gildersleeve, G. S....	New York City.
Fisher, E. A.....	Rochester, N. Y.	Giles, J. A.....	Binghamton, N. Y.
Fisher, H. T.....	New York City.	Giles, R.....	New York City.
Fitch, J. H.....	New York City.	Gillespie, R. H.....	Allentown, Pa.
Fitzmaurice, E. J....	Philadelphia, Pa.	Gillette, E.....	Sheridan, Wyo.
Fletcher, R.....	Hanover, N. H.	Gilman, C.....	New York City.
Flinn, A. D.....	New York City.	Gilmore, T. N.....	New York City.
Follansbee, R.....	Denver, Colo.	Ginsburg, S. R.....	New York City.
Follin, J. W.....	Philadelphia, Pa.		

- Givotovsky, V. T.....New York City. Hammond, H. P.....Brooklyn, N. Y.
 Glander, J. H., Jr....Glen Ridge, N. J. Hammond, J. F.....New York City.
 Goldmark, H.....New York City. Hanavan, W. L.....New York City.
 Goodell, J. M....Upper Montclair, N. J. Hanna, J. H.....Washington, D. C.
 Goodkind, M....New Brunswick, N. J. Hansel, C.....New York City.
 Goodman, C.....New York City. Hapgood, F. H.....Jamaica, N. Y.
 Goodman, J.....New York City. Harding, H. S.....New York City.
 Goodman, L.....New York City. Haring, A.....New York City.
 Goodwin, A. B.....New York City. Harrington, F. F.....Norfolk, Va.
 Gould, R. R.....New York City. Harris, B. B.....New York City.
 Gould, W. T.Hastings-on-Hudson, N. Y. Harris, H. F.....Trenton, N. J.
 Graham, R. R.....New York City. Harrison, E. W.....Jersey City, N. J.
 Gravell, W. H.....Philadelphia, Pa. Harrison, S. H.....Easton, Pa.
 Gray, H. M.....Katonah, N. Y. Harte, C. R.....New Haven, Conn.
 Gray, J. H.....Orange, N. J. Hartwell, O. W.....Harrisburg, Pa.
 Gray, W.....New York City. Harwi, S. J.....Bayonne, N. J.
 Greeley, S. A.....Chicago, Ill. Harwood, G. A.....New York City.
 Green, C. S.....New York City. Haskell, E. E.....Ithaca, N. Y.
 Greene, C.....New York City. Haskins, W. J.....New York City.
 Greene, G. S., Jr...South Orange, N. J. Hatch, F. N.....New York City.
 Greene, L. W.....Albany, N. Y. Hatton, T. C.....Milwaukee, Wis.
 Greene, R. deC.....New York City. Hauck, W.....New York City.
 Greenhalgh, S. F.....Rahway, N. J. Havens, V. L.....New York City.
 Greenlaw, R. W.....New York City. Hawley, W. E.....Duluth, Minn.
 Greenleaf, D. L.....New York City. Haydock, C.....Philadelphia, Pa.
 Gregory, J. H.....Baltimore, Md. Haywood, C. E.....New York City.
 Greiner, J. E.....Baltimore, Md. Hazen, A.....Orange, N. J.
 Grigsby, W. B.....Brooklyn, N. Y. Healy, F. G.....Medicine Bow, Wyo.
 Gross, C. F.....Philadelphia, Pa. Healy, J. P.....Washington, D. C.
 Grove, W. G.....New York City. Healy, J. R.....New York City.
 Grover, N. C.....Washington, D. C. Heiser, A. B.....Brooklyn, N. Y.
 Grover, W. A.....Dover, N. H. Heiser, W. J.....Brooklyn, N. Y.
 Grunsky, C. E.....San Francisco, Cal. Hellyer, H. A. C.....Tenafly, N. J.
 Gunther, C. O.....Hoboken, N. J. Henckel, A. H.....Newark, N. J.
 Gutman, D.....Pelham, N. Y. Henderson, H.....Port Arthur, Tex.
 Hennebique, J. J.....New York City.
 Haggard, H. H.....New York City. Henny, D. C.....Portland, Ore.
 Haines, E. G.....New York City. Herbert, H. M.....Bound Brook, N. J.
 Hale, H. E.....New York City. Hering, R.....New York City.
 Hale, H. M.....New York City. Hermanns, F. E.....Brooklyn, N. Y.
 Hale, R. A.....Lawrence, Mass. Heron, E. C.....Washington, D. C.
 Hallahan, J. P. H....Philadelphia, Pa. Herschel, C.....New York City.
 Hallihan, J. P.....New York City. Hewes, V. H.....New York City.
 Halsey, W. H.....Southampton, N. Y. Hewett, B. H. M.....New York City.
 Hamilton, E. P.....New York City. Hewitt, G.....New York City.
 Hamilton, J. W.....New York City. Heyman, W.....Jersey City, N. J.
 Hammel, E. F.....Mt. Vernon, N. Y. Higgins, C. H.....New York City.

Higgins, J. W.....	New York City.	Husson, W. M.....	New York City.
Hill, H. C.....	Binghamton, N. Y.	Hutchins, E.....	New York City.
Hilton, J. C.....	East Orange, N. J.	Huttenloch, M. W....	Montclair, N. J.
Hines, H. E.....	Princeton, W. Va.	Hyde, H. E.....	Ithaca, N. Y.
Hirst, A.....	New York City.	Hynds, H. D.....	New York City.
Hirzel, A. S.....	Wilmington, Del.		
Hitchcock, F. C.....	New York City.	Ingersoll, C. M.....	New York City.
Hodgdon, B. A.....	East Orange, N. J.	Irwin, J. C.....	Boston, Mass.
Hodgdon, F. W.....	Arlington, Mass.		
Hodgman, B. B.....	New York City.	Jackson, J. F.....	New Haven, Conn.
Hoerner, C. G., Jr....	Phoenicia, N. Y.	Jacobs, R. H.....	New York City.
Hogan, J. P.....	New York City.	Janes, G. P.....	Roselle, N. J.
Holbrook, J. B.....	New York City.	Janni, A. C.....	New York City.
Holbrook, P.....	New York City.	Joachimson, M.....	New York City.
Holden, C. A.....	New Rochelle, N. Y.	Johannesson, S.....	New York City.
Holden, C. A.....	Hanover, N. H.	Johnson, F. W.....	New York City.
Holdredge, N. C.....	Haskell, N. J.	Johnson, G. A.....	New York City.
Holland, C. M.....	New York City.	Johnson, J. M.....	Marion, S. C.
Hollister, S. C.....	Philadelphia, Pa.	Jonah, F. G.....	St. Louis, Mo.
Hollyday, R. C.....	New York City.	Jones, V. K....	East Las Vegas, N. Mex.
Holtzman, S. F.,		Jordan, L. C.....	New Rochelle, N. Y.
	Hastings-on-Hudson, N. Y.	Junkersfeld, P.....	Boston, Mass.
Honness, G. G.....	Grand Gorge, N. Y.		
Hood, B. O.....	Newark, N. J.	Kaufman, G.....	New York City.
Hoover, A. P.....	New York City.	Keefe, D. A.....	Athens, Pa.
Hough, D. L.....	New York City.	Keefer, C. H.....	Ottawa, Ont., Canada
Hovey, O. E.....	New York City.	Kehoe, A. L.....	New York City.
Howard, E. E.....	Kansas City, Mo.	Keith, G. M.....	Brooklyn, N. Y.
Howard, E. H.....	Framingham, Mass.	Keith, H. C.....	New York City.
Howe, C. E.....	Hastings-on Hudson, N. Y.	Keeler, O. B.....	New York City.
Howe, E. W.....	Boston, Mass.	Kelly, H. A.....	Jersey City, N. J.
Howe, W. C.....	Worcester, Mass.	Kennedy, P. J.....	Holyoke, Mass.
Howell, W. A.....	Newark, N. J.	Kennison, K. R.....	Boston, Mass.
Hoyt, J. C.....	Washington, D. C.	Kershaw, W. H.....	New York City.
Hubbell, C. W.....	Detroit, Mich.	Ketchum, M. S.....	Philadelphia, Pa.
Hudson, C. W.....	New York City.	Killion, L. J.....	New York City.
Hughes, H. J.....	Cambridge, Mass.	Kimball, F. C.....	Summit, N. J.
Hulbert, E. C.....	Wampum, Pa.	Kingsley, G.....	New York City.
Hulsart, C. R.....	New York City.	Kinne, G. W.....	Philadelphia, Pa.
Humphrey, R. L.....	Philadelphia, Pa.	Kinsey, W. A.....	Newark, N. J.
Humphreys, A. C.....	New York City.	Kipp, B.....	New York City.
Hunt, C. A.....	Brooklyn, N. Y.	Kirkwood, H. C.....	Flushing, N. Y.
Hunt, C. W.....	New York City.	Knickerbocker, C. E....	New York City.
Hunt, R. W.....	Westfield, N. J.	Knight, H. M....	Upper Montclair, N. J.
Hunt, W. H.....	New York City.	Knight, R. W.....	New York City.
Hurd, H. L.....	White Plains, N. Y.	Knighton, J. A.....	New York City.
Hurlbut, C. C.....	New York City.	Knox, S. B.....	New York City.

Knox, S. K.....	Montclair, N. J.	Lowinson, O.....	New York City.
Koester, E. F.....	Wilmington, Del.	Lucas, G. L.....	New York City.
Kohlheyer, C. C.....	New York City.	Lucius, A.....	New York City.
Kolb, H. J.....	Brooklyn, N. Y.	Luhrs, A. W.....	North Bergen, N. J.
Kornfeld, A. E.....	New York City.	Lundgren, L.....	New York City.
Kraus, A.....	Glen Ridge, N. J.	Lundie, J.....	New York City.
Krause, M. C.....	Williamsport, Pa.	Lynde, C.....	Walden, N. Y.
Krellwitz, D. W.....	Flemington, N. J.	Lyon, G. J.....	Washington, D. C.
Kurashige, T.....	Tokyo, Japan.		
Kurtz, F.....	New York City.	MacFeeters, J. O....	Glen Ridge, N. J.
		MacGregor, R. A.....	New York City.
Lamphere, F. E.....	New York City.	Machen, H. B.....	New York City.
Lamson, W. M.....	Brooklyn, N. Y.	McCarthy, D. F.....	Bronxville, N. Y.
Lanagan, F. R.....	Albany, N. Y.	McCollough, C. A.....	New York City.
Landreth, O. H.....	New York City.	McComb, C. O.....	Adams, N. Y.
Lang, F. A.....	New York City.	McComb, D. E.....	Washington, D. C.
Langthorn, J. S.....	New York City.	McConnell, I. W.....	New York City.
Larmon, F. P.....	Omaha, Nebr.	McDonald, H.....	Nashville, Tenn.
Larsson, E.....	New York City.	McDowell, F. F.....	New York City.
Latimer, C. A.....	New York City.	McGrew, A. B.....	Pittsburgh, Pa.
Law, W. H.....	Providence, R. I.	McIntyre, W. A.....	Philadelphia, Pa.
Lawrence, E. V.....	New York City.	McLoughlin, F. O. X...	New York City.
Lawrence, R. J.....	Philadelphia, Pa.	McMenimen, R. A.....	Detroit, Mich.
Lee, E. M.....	New York City.	McMillan, F. R.....	New York City.
Leete, P. R.....	Boston, Mass.	McMinn, T. J.....	Bridgeport, Conn.
Leffler, B. R.....	Cleveland, Ohio.	McNaughton, W. C....	New York City.
Lehlbach, G.....	Newark, N. J.	McNear, G. P.....	New York City.
Leiser, F.....	Richmond Hill, N. Y.	McPike, M. J.....	Brooklyn, N. Y.
Leland, O. M.....	Minneapolis, Minn.	Maier, H. L.....	Wilmington, Del.
Leon, H. M.....	New York City.	Maitland, A., Jr.....	Kansas City, Mo.
Leser, H.....	New York City.	Manley, H., Jr.....	New York City.
Lesley, R. W.....	Philadelphia, Pa.	Manley, L. B.....	Philadelphia, Pa.
Letson, T. H.....	New York City.	Manz, M. W.....	Mansfield, Ohio.
Lewis, L. H.....	New York City.	Marsden, R. R.....	Hanover, N. H.
Lex, W. I.....	Philadelphia, Pa.	Marshall, C. E.....	Garden City, N. Y.
Lindenthal, G.....	New York City.	Marshall, L. S.....	New York City.
Lindsey, A. R.....	Philadelphia, Pa.	Marshall, R. A.....	New York City.
Linton, H.....	Philadelphia, Pa.	Marston, A.....	Ames, Iowa.
Lippincott, J. B.....	Los Angeles, Cal.	Martin, B. C.....	Albany, N. Y.
Lobo, C.....	Brooklyn, N. Y.	Marx, C. D....	Stanford University, Cal.
Lockwood, W. D.....	Philadelphia, Pa.	Mason, F.....	New York City.
Loewe, D. L.....	New York City.	Matheson, C. P.....	Washington, Pa.
Loewenstein, J.....	New York City.	Matheson, J. D.....	New York City.
Logan, J.....	Mount Holly, N. J.	Matlaw, I. S.....	New York City.
Long, E. M.....	New York City.	Mattimore, H. S.....	Harrisburg, Pa.
Loughran, H. S....	New Rochelle, N. Y.	Mazeau, A.....	New York City.
Low, G. E.....	New York City.	Mead, C. A.....	Upper Montclair, N. J.

Meads, C.	New York City.	Newell, F. H.	Washington, D. C.
Mebus, C. F.	Philadelphia, Pa.	Newkirk, S. F., Jr.	Glen Ridge, N. J.
Meem, J. C.	Brooklyn, N. Y.	Nial, W. A.	Troy, N. Y.
Meggy, R. L. G.	Fanwood, N. J.	Nichols, C. H.	New Haven, Conn.
Mehren, E. J.	New York City.	Noble, F. C.	New York City.
Meigs, J.	Philadelphia, Pa.	Nolan, T. B., Jr.	Washington, D. C.
Meise, G. J.	New York City.	Norcross, P. H.	Atlanta, Ga.
Melick, N. A.	Newark, N. J.	Noren, G. A.	New York City.
Meriwether, D., Jr.	Philadelphia, Pa.	Norris, W. H.	Portland, Me.
Merriman, M.	New York City.	Nygren, F. H.	Brooklyn, N. Y.
Merriman, T.	New York City.		
Merryman, W. C.	New York City.	O'Brien, J. H.	New York City.
Metcalf, L.	Boston, Mass.	Ockert, F. A.	New York City.
Metcalfe, A. H.	Rochester, N. Y.	O'Connor, J. A.	Albany, N. Y.
Miller, A. B.	New York City.	Odell, F. S.	Port Chester, N. Y.
Miller, M.	New York City.	Ogden, C. W.	Jersey City, N. J.
Miller, M. M.	Tuckahoe, N. Y.	Ogden, H. N.	Ithaca, N. Y.
Miller, M. S.	Brooklyn, N. Y.	Ogden, J. C.	New York City.
Miller, S. F.	South Orange, N. J.	Ogden, M. M.	Franklin, N. Y.
Miner, J. H.	New York City.	Okun, A. H.	Brooklyn, N. Y.
Mitchell, S. P.	Philadelphia, Pa.	Oleri, F. J.	West New York, N. J.
Modjeski, R.	Chicago, Ill.	Orlian, I.	Philadelphia, Pa.
Mogensen, O. E.	New York City.	Ott, S. J.	Rutherford, N. J.
Moisseiff, L. S.	New York City.	Oxholm, T. S.	West New Brighton, N. Y.
Molitor, F. A.	New York City.		
Moore, C. H.	New York City.	Paaswell, G.	New York City.
Moore, E. J.	New York City.	Paddock, H. C.	New York City.
Moore, F. C.	New York City.	Paine, H. A.	New York City.
Moore, F. F.	New York City.	Palmer, E. P.	New York City.
Moore, S. W.	New York City.	Palmer, H. M.	New York City.
Morrill, G. P.	Boston, Mass.	Palmer, S. B.	Norwich, Conn.
Morrison, G.	Yonkers, N. Y.	Pardoe, W. S.	Philadelphia, Pa.
Morse, C. F.	Southampton, N. Y.	Parker, C. J.	New York City.
Moss, R. E.	Glen Ridge, N. J.	Parker, R. D.	Austin, Tex.
Moulton, O. M.	Brookline, Mass.	Parker, W. P.	Philadelphia, Pa.
Mowlds, E.	Wilmington, Del.	Parmley, W. C.	New York City.
Muirhead, J. H. H.	New York City.	Parsons, H. A.	Stamford, Conn.
Munkelt, F. H.	New York City.	Parsons, H. de B.	New York City.
Murdock, R. B.	New York City.	Parsons, W. B.	New York City.
Murphy, J. J.	Yonkers, N. Y.	Peabody, W. W.	Providence, R. I.
Myers, C. H.	New York City.	Pease, J. N.	Charlotte, N. C.
Myers, J. H.	New York City.	Peck, J. S.	New York City.
		Pegram, G. H.	New York City.
Neel, A. W.	New York City.	Peiser, F.	Glen Rock, N. J.
Nelson, F. B.	New York City.	Pendergrass, R. A.	Philadelphia, Pa.
Nelson, J. W.	New York City.	Pendlebury, E.	Arlington, N. J.
Newcomb, W. T.	Easton, Pa.	Perkins, W. C.	Philadelphia, Pa.

- Perrine, G. New York City. Reeves, W. F. New York City.
 Perrot, E. G. Philadelphia, Pa. Reich, P. J. Pittsburgh, Pa.
 Perry, F. W. New York City. Reid, H. A. Warren, Ohio.
 Perry, J. P. H. New York City. Reimer, F. A. East Orange, N. J.
 Perry, L. Easton, Pa. Reinhardt, J. B. Rochester, N. Y.
 Peverley, R. St. L. New York City. Renz, E. W. Philadelphia, Pa.
 Phillips, J. H. Newark, N. J. Rhett, A. H. New York City.
 Phillips, A. E. Washington, D. C. Richardson, C. New York City.
 Phillips, J. M. Bridgeport, Conn. Richardson, J. D. Corona, N. Y.
 Phillips, S. B. Newton Center, Mass. Richardson, J. H. New York City.
 Pierce, C. A. New York City. Ricketts, A. T. New York City.
 Piez, W. Birmingham, Ala. Ridgway, H. New York City.
 Pinner, G. New York City. Ridgway, R. New York City.
 Pistor, G. E. J. New York City. Ridley, C. E. New York City.
 Pohl, C. A. New York City. Riegler, L. J. Ben Avon, Pa.
 Polk, A. C. New York City. Rights, L. D. New York City.
 Pollock, C. D. New York City. Rindsfoos, C. S. New York City.
 Pond, F. H. Brooklyn, N. Y. Ripley, H. L. Boston, Mass.
 Pond, H. O. New York City. Ripley, J. Albany, N. Y.
 Porter, J. E. Yonkers, N. Y. Risley, W. I. Atlantic City, N. J.
 Porter, J. M. Easton, Pa. Roach, J. H. New York City.
 Post, C. W. Albany, N. Y. Robbins, F. H. New York City.
 Potter, A. New York City. Roberts, L. B. New York City.
 Powell, C. U. Flushing, N. Y. Roberts, R. F. New York City.
 Powers, C. V. V. New York City. Roberts, W. W., Jr. Brooklyn, N. Y.
 Pratt, A. H. Newark, N. J. Robinson, A. F. Chicago, Ill.
 Pratt, H. B. Waltham, Mass. Robinson, G. L. New York City.
 Preston, G. H. New York City. Rodman, G. E. New York City.
 Preston, H. L. New York City. Rogers, A. New York City.
 Preston, H. W. Elmira, N. Y. Rogers, E. H. West Newton, Mass.
 Price, C. P. Boston, Mass. Rohrer, J. B. Lancaster, Pa.
 Price, F. O. Brooklyn, N. Y. Ruckes, J. J., Jr. New York City.
 Price, P. L. Mt. Vernon, N. Y. Rugg, W. F. White Plains, N. Y.
 Priest, B. B. New York City. Rumery, R. R. New York City.
 Priest, H. M. Elmira, N. Y. Rumpf, C. P. Brooklyn, N. Y.
 Proctor, R. F. Baltimore, Md. Ryder, E. M. T. New York City.
 Puff, C. F., Jr. Philadelphia, Pa.
 Pugh, M. R. Wayne, Pa.
 Purdy, C. T. New York City.
 Quinn, M. F. New York City.
 Rankin, E. S. Newark, N. J.
 Rapalje, deW. New York City.
 Rasmussen, B. Ulster Park, N. Y.
 Reed, W. B. New York City.
 Reeves, A. H. Elmhurst, N. Y.
 Sabin, A. H. New York City.
 Sackett, R. L. State College, Pa.
 Sacks, S. I. Philadelphia, Pa.
 Sanborn, F. B. Boston, Mass.
 Sanborn, J. F. New York City.
 Sando, W. J. Milwaukee, Wis.
 Sargent, E. H. Albany, N. Y.
 Sargent, J. A. New York City.
 Saunders, R. S. College Point, N. Y.
 Saville, C. M. Hartford, Conn.

Sax, P. M.....	Philadelphia, Pa.	Smillie, R.....	New York City.
Sayers, E. L.....	New York City.	Smith, A.....	Bayonne, N. J.
Schaeffer, A.....	New York City.	Smith, C. E.....	St. Louis, Mo.
Scheidenhelm, F. W....	New York City.	Smith, C. W.....	Newburyport, Mass.
Schmid, F. R.....	New York City.	Smith, E. M.....	New York City.
Schmitt, F. E....	Upper Montclair, N. J.	Smith, E. U.....	Narberth, Pa.
Schobinger, G.....	New York City.	Smith, F. V.....	New York City.
Scholtz, H. F.....	Passaic, N. J.	Smith, H. S.....	Wilkes-Barre, Pa.
Schoonmaker, L. M....	Flushing, N. Y.	Smith, J. R.....	Bethlehem, Pa.
Schryver, H. F.....	Columbus, Ohio.	Smith, J. W.....	New York City.
Schusler, G. W.....	Pittsburgh, Pa.	Smith, M. E.....	New York City.
Schwarze, C. T.....	New York City.	Smith, M. H.....	White Plains, N. Y.
Schweizer, R., Jr..	Ridgefield Park, N. J.	Smith, R. B.....	New York City.
Schwiers, F. W., Jr..	New York City.	Smith, W. F.....	Germantown, Pa.
Scrimshaw, J. F.....	Arlington, N. J.	Smoley, C. K.....	Scranton, Pa.
Sealey, D. A.....	East Orange, N. J.	Smulski, E.....	New York City.
Seaman, D. H.....	Newark, N. J.	Snell, T. C. B.....	New York City.
Seaman, H. B.....	New York City.	Snow, C. H.....	New York City.
Searle, C. D.....	New York City.	Snow, J. B.....	New York City.
Selmer, W. L.....	New York City.	Snyder, F. A.....	Summit, N. J.
Senior, F. S.....	Montgomery, N. Y.	Solomon, G. R.....	New York City.
Serber, D. C.....	New York City.	Soper, G. A.....	New York City.
Shaffer, I. O.....	New York City.	Spear, W. E.....	Merrick, N. Y.
Shailer, R. A.....	Boston, Mass.	Spencer, H.....	New York City.
Shaw, D. J.....	New York City.	Spencer, T. N.....	Philadelphia, Pa.
Shaw, G. H.....	Philadelphia, Pa.	Sperry, H. M.....	New York City.
Shea, W. J.....	Hudson, N. Y.	Splitstone, C. H.....	New York City.
Sheble, E. K.....	Washington, D. C.	Sprague, N. S.....	Pittsburgh, Pa.
Shelley, H. T.....	Philadelphia, Pa.	Squire, E. J.....	Brooklyn, N. Y.
Shepard, R. B., Jr..	Wilmington, N. C.	Stabell, F. P.....	Chicago, Ill.
Sherman, A. L.....	Newark, N. J.	Staniford, C. W.....	New York City.
Sherman, H. J.....	Philadelphia, Pa.	Stark, C. W.....	Yonkers, N. Y.
Sherrerd, M. R.....	Newark, N. J.	Starr, H. H.....	Philadelphia, Pa.
Sherron, G. A.....	Philadelphia, Pa.	Stearns, E. B.....	New York City.
Shertzer, T. B.....	New York City.	Stearns, F. L.....	New York City.
Shoemaker, L. H.....	New York City.	Stearns, F. L.....	Scarsdale, N. Y.
Shoemaker, M. N.....	Newark, N. J.	Stearns, R. H.....	Boston, Mass.
Sikes, Z. H.....	Yonkers, N. Y.	Steffens, W. F.....	New York City.
Silliman, C.....	Washington, D. C.	Steinman, D. B.....	New York City.
Singstad, O.....	Brooklyn, N. Y.	Stephens, A. W.....	East Orange, N. J.
Sitt, W. T.....	New York City.	Stephens, P. F.....	Philadelphia, Pa.
Skillin, E. S.....	Glen Ridge, N. J.	Stern, E. W.....	New York City.
Skinner, F. F.....	Mt. Vernon, N. Y.	Stevens, C. H.....	Philadelphia, Pa.
Skinner, F. W.....	New York City.	Stevens, H. C.....	New York City.
Skinner, J. F.....	Rochester, N. Y.	Stevens, H. E.....	St. Paul, Minn.
Slater, W. A.....	Washington, D. C.	Stevenson, W. F....	New Rochelle, N. Y.
Slocum, H. S.....	New York City.	Stieve, W. M.....	Washington, D. C.

- Stiles, A. I. New York City. Tighe, J. L. Holyoke, Mass.
 Storey, F. S. New York City. Tilden, C. J. New Haven, Conn.
 Stowe, H. C. Brooklyn, N. Y. Tinker, G. H. Cleveland, Ohio.
 Strachan, J. Brooklyn, N. Y. Tobey, H. E. Scottsdale, Pa.
 Strachan, J. J. New York City. Tompkins, E. DeV. New York City.
 Strachan, R. C. New York City. Torrey, J. E. Paterson, N. J.
 Strehan, G. E. New York City. Tower, J. W. New York City.
 Strobel, C. L. Chicago, Ill. Townsend, C. M. Brooklyn, N. Y.
 Stuart, F. L. New York City. Townsend, F. T. New York City.
 Stuart, J. T. Philadelphia, Pa. Trautwine, J. C., Jr. Philadelphia, Pa.
 Studwell, C. A. Port Chester, N. Y. Trautwine, J. C., 3d. Philadelphia, Pa.
 Sturdevant, J. H. Poughkeepsie, N. Y. Travers-Ewell, A. New York City.
 Sudler, C. E. New York City. Tribus, L. L. New York City.
 Sumner, M. R. New York City. Triest, W. G. New York City.
 Sutton, F. Washington, D. C. Troelsch, H. W. New York City.
 Swaab, S. M. Philadelphia, Pa. Trout, C. E. New York City.
 Swezey, E. C. Clinton Corners, N. Y. Tucker, L. W. Freeport, N. Y.
 Swift, W. E. New York City. Tull, R. W. New York City.
 Swindells, J. S. New York City. Turneure, F. E. Madison, Wis.
 Taber, G. A. Brooklyn, N. Y. Turner, D. L. New York City.
 Taft, J. R. New York City. Tuska, G. R. New York City.
 Tainter, F. S. Far Hills, N. J. Tuttle, A. S. New York City.
 Talbot, A. N. Urbana, Ill. Ulrich, E. B. Reading, Pa.
 Talbot, E. Weehawken, N. J. Unger, W. L. Jamaica, N. Y.
 Tallman, L. Brooklyn, N. Y. Ungrich, M. J. New York City.
 Tallman, P. B. East Orange, N. J. Upton, J. Flushing, N. Y.
 Taylor, C. F. New York City.
 Taylor, E. A. Governor's Island, N. Y. Vail, E. M. Plainfield, N. J.
 Taylor, G. L. Pittsburgh, Pa. Vail, J. J. Rahway, N. J.
 Taylor, W. G. Newark, N. J. Vanderbrook, R. H. Brooklyn, N. Y.
 Tejada, C. S. New York City. Van Duyne, J. R. Newark, N. J.
 Tenney, W. R. Brooklyn, N. Y. Van Dyke, C. W. New York City.
 Terhune, J. E. New York City. Van Eenenaam, C. Lansing, Mich.
 Terry, J. H. Philadelphia, Pa. Van Scoyoc, H. S.,
 Theban, J. G. Pleasantville, N. Y. Montreal, Que., Canada.
 Thomas, C. D. Hempstead, N. Y. Van Suetendael, A. O. Yonkers, N. Y.
 Thomassen, V. G. Brooklyn, N. Y. Vinton, T. M. New York City.
 Thomes, E. H. Jamaica, N. Y. Vogel, J. L. Chatham, N. J.
 Thompson, H. C. New York City. Vogleson, J. A. Philadelphia, Pa.
 Thompson, S. E. Boston, Mass. Vredenburg, W. New York City.
 Thompson, W. G. B. Trenton, N. J. Vrooman, M. Gloversville, N. Y.
 Thomson, A., Jr. East Orange, N. J.
 Thomson, T. K. New York City. Wadsworth, G. R. New York City.
 Thorn, H. B. New York City. Wadsworth, J. E. New York City.
 Thurlow, O. G. Birmingham, Ala. Wagner, J., Jr. Philadelphia, Pa.
 Tidd, A. W. White Plains, N. Y. Wagner, S. T. Philadelphia, Pa.

Wait, B. H.....	New York City.	Williams, C. G.....	Plainfield, N. J.
Waite, D. C.....	New York City.	Williams, F.....	East Orange, N. J.
Walker, E. D.....	State College, Pa.	Williams, G. S.....	Ann Arbor, Mich.
Walker, J. J.....	New York City.	Williams, J. P. J.....	New York City.
Wall, E. E.....	St. Louis, Mo.	Williams, T. S.....	Towaco, N. J.
Walzer, I.....	Hempstead, N. Y.	Willoughby, J. E....	Wilmington, N. C.
Warnock, W. H.....	New York City.	Wills, B. H.....	Mt. Holly, N. J.
Warren, S.....	New York City.	Wilmot, J.....	New York City.
Warwick, C. L.....	Philadelphia, Pa.	Wilmot, S.....	Providence, R. I.
Wason, L. C.....	Brookline, Mass.	Wilson, A. R.....	Lansdowne, Pa.
Watson, G. L.....	New York City.	Wilson, B.....	New York City.
Watson, W. J.....	Cleveland, Ohio.	Wilson, C. W. S.....	New York City.
Webb, D. J. H.....	East Haven, Conn.	Wilson, P. H.....	New York City.
Webster, A. L.....	New York City.	Wilson, W.....	New York City.
Webster, G. S.....	Philadelphia, Pa.	Wilson, W. T.....	New York City.
Webster, M. A.....	Philadelphia, Pa.	Winn, G. P.....	Nashua, N. H.
Weed, I.....	Brooklyn, N. Y.	Winslow, F. I.....	Framingham, Mass.
Weed, L. W.....	New York City.	Winsor, F. E.....	Providence, R. I.
Wegmann, E.....	New York City.	Winsor, G. A.....	Pleasantville, N. Y.
Weller, F. R.....	Washington, D. C.	Winsor, H. D.	West New Brighton, N. Y.
Wells, C. E.....	North Adams, Mass.	Winston, C. A.....	West Orange, N. J.
Wells, G. E.....	Naugatuck, Conn.	Wintermute, F. C....	Wilkes-Barre, Pa.
Wells, H. A.....	Hanover, N. H.	Wise, C. R.....	Passaic, N. J.
Welty, H. T.....	New York City.	Wise, R. S.....	Clifton, N. J.
Wendt, E. F.....	Washington, D. C.	Witmer, F. P.....	East Orange, N. J.
Weston, R. S.....	Boston, Mass.	Wolfe, F. G.....	Scranton, Pa.
Weymouth, A.....	New York City.	Wolfe, R. B.....	Glendale, N. Y.
Wheatcroft, H. B., Jr.	New York City.	Wolpert, O.....	New York City.
Wheeler, F. I., Jr.....	Newark, N. J.	Wood, G. P.....	Peekskill, N. Y.
Wheeler, R. N.....	Kingston, N. Y.	Woodard, S. H.....	New York City.
Whipple, J. B.....	Bridgeport, Conn.	Woodcock, H. W.....	Brooklyn, N. Y.
Whitcraft, L. N.....	Hackensack, N. J.	Worcester, J. R.....	Boston, Mass.
White, B. E.....	Utica, N. Y.	Wright, F. J.....	Paterson, N. J.
White, L.....	New York City.	Wright, S. H.....	Philadelphia, Pa.
White, W. M.....	New York City.	Wyckoff, C. R.....	New York City.
Whitman, E. B.....	Baltimore, Md.	Wyman, A. M.....	Philadelphia, Pa.
Whitney, G. C.....	Brooklyn, N. Y.		
Whitsit, L. A.....	New York City.	Yates, E. A.....	New York City.
Whitson, A. U.....	Flushing, N. Y.	Yates, J. J.....	Jersey City, N. J.
Whitson, M. J.....	New York City.	Yates, W. H.....	New York City.
Wiesenberg, W. M.....	Dover, N. J.	Yereance, A. W....	South Orange, N. J.
Wigley, C. G.....	New York City.	Yereance, W. B.....	New York City.
Wigton, C. B.....	New York City.	Young, C. G.....	New York City.
Wilcock, F.....	Brooklyn, N. Y.		
Willcox, H.....	New York City.	Zeltner, E. L.....	Elmhurst, N. Y.

ITEMS OF INTEREST

The Committee on Publications will be glad to receive communications of general interest to the Society, and will consider them for publication in *Proceedings* in "Items of Interest". This is intended to cover letters or suggestions from our membership concerning matters which are not of a technical character. Such communications, however, must not be controversial or commercial.

THE ENGINEERING FOUNDATION

The Engineering Foundation was established in 1914 "for the furtherance of research in science and engineering, or for the advancement in any other manner of the Profession of Engineering and the good of mankind", and for the following purposes: To promote and support worthy researches related to engineering in all its branches; to establish and operate engineering research laboratories, if funds be provided therefor; to co-operate with National Research Council and the Engineering Societies in the stimulation and co-ordination of scientific research.

ENDOWMENT FUNDS NEEDED.

The Foundation needs a large increase of endowment. It is obliged frequently to refuse to support research projects brought to it because it lacks funds. Gifts of \$1 000 or more are desired. Each donor of \$250 000 or more will be honored as a Founder. A gift of \$50 000 has been offered contingent on the receipt of nine other gifts of \$50 000 each. Gifts to the Foundation are exempt from income tax.

A gift for research is a productive investment.

The Engineering Foundation is administered under the auspices of the United Engineering Society, the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, by a board of thirteen representatives of these Societies, and three members at large.

A progress report of the Foundation, a form of Deed of Gift, and other information will be sent by the Secretary, Alfred D. Flinn, M. Am. Soc. C. E., 29 West 39th Street, New York City, on request.

REPORT OF SPECIAL COMMITTEE OF AMERICAN SOCIETY OF MECHANICAL ENGINEERS ON CODE OF ETHICS

Your Committee appointed on October 24th, 1919, to consider a Code of Ethics for the American Society of Mechanical Engineers, submits the following final report:

1.—A Code of Ethics should be a brief, positive statement of the professional relations of engineers to the public, to their clients or employers, and to one another.

2.—The Code of Ethics adopted by the American Society of Mechanical Engineers in 1912, is too lengthy a document, has not been continuously called to the members' attention, and is seldom consulted by them. It has also been strongly

criticized for failure to state the engineer's interest in the public welfare. Your Committee recommends that the Code of 1912 be superseded by a briefer and more comprehensive one which can be reprinted at regular intervals in *Mechanical Engineering* and can thus be kept continually before our members.

3.—The new Code of Ethics should be common to engineers of every branch of the profession, and also to architects, whose work is closely associated with that of engineers. The universal adoption of such a Code would give it public recognition and support and would thereby make it better known and more binding and effective.

4.—Your Committee's first report was presented at the Spring Meeting at St. Louis, Mo., on May 24th, 1920. On motion, the report was referred to the Engineering Council or to such other organization as may be formed for joint action by the Engineering Societies on matters of common interest, this report to form the basis of a possible common Code of Ethics. Your Committee at the same time was to continue to take such action as might seem advisable, looking toward the adoption of a new Code by this Society in case no other suitable action was taken. In conformity with this motion, the Secretary of the Society and Mr. Main presented the first report to Engineering Council, but owing to the formation of The Federated American Engineering Societies, the Engineering Council decided not to take up the matter of a Code of Ethics.

Your Committee has also submitted the Code to the other National Engineering Societies and has received most encouraging evidence of a desire to co-operate on a common Code of Ethics for engineers. Other Societies have taken no definite action up to the time of submitting this report.

Your Committee has received a great many comments and suggestions on the proposed Code and has also noted the discussions which have appeared in the technical press, where it has been given wide publicity. As a result of these helpful criticisms some slight changes have been made in certain clauses of the Code.

Your Committee has concluded that the adoption of the following Code by this Society would greatly encourage the other National Societies to adopt this or a similar joint Code of Ethics for all engineers and architects.

5.—Your Committee therefore recommends that the following Code of Ethics be adopted by this Society, subject to modification by joint conference of representatives of this and other National Societies; such modifications in the form of amendments to be accepted by vote of the members of this Society.

6.—Regarding the administration of a Code of Ethics adopted by this Society, your Committee recommends that the President appoint a Standing Committee on Professional Conduct after any necessary provision has been made in the Constitution and By-Laws. The duties of this Committee shall be to interpret the Code of Ethics and any cases of questionable ethical conduct on the part of members that may be submitted to them and to report these interpretations to the Council. The Council may approve these interpretations or take such other action as may seem necessary or just. These interpretations shall be published, when submitted, in *Mechanical Engineering* for the guidance of fellow-members of the Society.

This Committee on Professional Conduct should be appointed by the President holding office at the time of the adoption of the Code and should consist of five members, one appointed for five years, one for four years, a third for three years,

a fourth for two years, and a fifth for one year. Thereafter, the President then holding office should appoint one member annually to serve for five years and should also fill any vacancies that may occur for unexpired terms. All of these members should be over forty years of age. The Committee after appointment should elect its own Chairman and Secretary. The Committee shall have power to secure evidence or other information in any particular case, not only from the Society's members, but from leaders in other professions. It may also appoint Sub-Committees to consider certain cases when deemed necessary.

This Committee shall investigate all complaints submitted to it bearing upon the professional conduct of any member and, after a fair opportunity to be heard has been given to the member involved, shall report its findings to the Council of the Society. This report may in some cases suggest certain procedure to the Council.

The Council shall have power to act on the recommendation of the Committee on Professional Conduct, either (1) to censure by letter the conduct of the member who has acted contrary to the Code if the breach is of a minor character, or (2) to cause the member's name to be stricken from the roll of the American Society of Mechanical Engineers.

Respectfully submitted,

SPECIAL COMMITTEE ON CODE OF ETHICS,

A. G. CHRISTIE, *Chairman*,

JOHN V. MARTENIS,

H. J. O. HINCHEY,

CHARLES T. MAIN,

ROBERT SIBLEY.

PROPOSED CODE OF ETHICS.

1.—The mechanical engineer will be guided in all his relations by the highest principles of honor, of fidelity to his client, and of loyalty to his country.

2.—His first duty is to serve the public with his specialized skill. In promoting the welfare of society as a whole he advances his own best interests, as well as those of the whole engineering profession.

3.—He shall consider as his essential obligation the protection of his client's or employer's interests in professional matters, provided these interests do not conflict with the public welfare.

4.—He shall refrain from associating himself or continuing to be associated with any enterprise of questionable or illegitimate character.

5.—He can honorably accept compensation, financial or otherwise, from one interested party only unless all parties have agreed to his recompense from other interested parties.

6.—He must inform his clients of any business connections, interests or circumstances, such as might influence his judgment or the quality of his services to his clients.

7.—He must not receive, directly or indirectly, without the consent of his clients or employers, any royalty, gratuity or commission on any patented or unpatented article or process used in the work upon which he is retained.

8.—He should satisfy himself, before taking over the work of another engineer, that good and sufficient reasons exist for making the change.

9.—He must base all reports and expert testimony on facts or upon theories founded only on sound engineering principles and experience fairly interpreted or applied.

10.—He should not make public without consent any information obtained from or through work for a client or employer, nor shall he at any time make such use of it as will embarrass the client or employer in whose service it was obtained, but may use such information as forming part of his professional experience to guide him in his own professional practice.

11.—He should do everything in his power to prevent sensational, exaggerated or unwarranted statements about engineering work being made through the press. First descriptions of new inventions, processes, etc., for publication should preferably be furnished only to the engineering societies or to the technical press.

12.—He should not advertise in an undignified, sensational or misleading manner, or offer commissions for professional work, or otherwise improperly solicit it.

13.—He should not compete knowingly with a fellow-engineer for employment on the basis of professional charges or attempt to supplant a fellow-engineer after definite steps have been taken toward the other's employment.

14.—He should assist all his fellow-engineers by exchange of general information and valuable experience or by instruction through the engineering societies, the schools of applied science, and the technical press.

This report was considered and discussed at the Annual Meeting of the American Society of Mechanical Engineers, held on December 4th, 1920, and referred back to the Committee.

UNITED ENGINEERING SOCIETY

Extracts from Treasurer's Annual Report for Year Ending December 31st, 1920

JANUARY 26TH, 1921.

The Real Estate Account now includes the following items:

Land	\$540 000.00
Building	1 360 183.15
Equipment	33 171.16
Founder Societies Preliminary Expenses.....	24 000.00
	<hr/>
	\$1 957 354.31

There was expended for equipment during the year \$2 495.21; this amount has been written off, and the account closed.

On December 31st, 1919, there was a balance of \$5 090.71, which has been increased from the operating accounts during the year by \$19 745.57, and from the setting up of Pre-paid Insurance \$2 301.59 making a total December 31st, 1920, of \$27 137.87. Of this amount, \$10 183.15 was expended for permanent improvements charged to Real Estate, leaving a balance of \$16 954.72 in balancing the account. \$5 142.41 was advanced to the Library, (\$3 191.92 for the General Account, and \$1 950.49 for Recataloging). No transfer has been made to the Depreciation and Renewal Fund for 1920.

The Gross Operating Expenses for the year 1920 were \$77 486.38, as compared with \$67 648.14 for the year 1919, an increase of \$9 838.24.

The funds available for the Library Board, and spent under its direction during the year, amounted to \$37 394.88. In addition, United Engineering Society advanced \$5 142.41.

The funds available for Engineering Council, and spent under its direction during the year, amounted to \$31 157.03, of which \$6 314.19 remained unexpended.

The General Reserve Fund of \$10 000 created by the Board of Trustees at a meeting held November 18th, 1914, to be available to take care of unforeseen fluctuations of income and outlay, has been preserved intact, there arising no calls on this fund during 1920.

The Depreciation and Renewal Fund at the beginning of 1920 amounted to \$100 199.00. During the year this fund was increased by the sum of \$4 016.16 for interest earned by the investments for this fund, and was decreased by \$818.75, due to difference in changing investments, making a total of \$103 396.41 on December 31st, 1920. Of this fund, \$17 426.44 was uninvested, but at the end of the year investments were allocated to it as follows:

Memorandum of indebtedness of United Engineering Society to provide operating cash.....	\$10 000.00
Note of Electrical Engineers due October 15th, 1920, but deferred one year.....	2 500.00
Undivided share in securities bought for Engineering Foundation Endowment (over-investment).....	2 041.45
Total	\$14 541.45
There remained uninvested on December 31st, 1920.....	\$2 884.99

In accordance with the authorization of the Board of Trustees, \$5 000 corporate stock of the City of New York Water Supply Bonds, due 1962, were sold on February 9th, at \$4 600, and \$5 000 corporate stock of the City of New York Registered Bonds, due 1960, were sold on March 8th, at \$4 587.50, and re-investment made in \$10 500 U. S. Second Liberty Loan, due 1942, bought at \$9 469.

The following summary shows the amounts of the funds held by the United Engineering Society as of December 31st, 1920:

Depreciation and Renewal Fund December 31st, 1919.....	\$100 199.00
Interest on invested funds during the year, 1920.....	4 016.16
	\$104 215.16
Loss on sale of securities, 1920.....	818.75
Total	\$103 396.41
General Reserve Fund.....	10 000.00
Engineering Foundation Fund.....	502 834.80
Library Endowment Fund.....	93 351.25
Total	\$709 582.46

TREASURER'S RECEIPTS AND PAYMENTS FOR 1920.

Receipts

Cash on hand January 1st, 1920.....	\$12 537.18
From Founder and Associate Societies:	
For offices, storage, halls, telephone, and miscellaneous..	\$86 540.65
From Societies not in building:	
For Halls.....	9 923.42
For Miscellaneous.....	902.20
For Library.....	27 858.57
For Library Service Bureau.....	21 374.00
For Library Recataloging.....	9 583.34
For Engineering Council.....	29 383.64
For Engineering Societies Service Bureau.....	12 361.40
Interest collected on Bonds and Deposits.....	9 583.34
Interest collected on Engineering Foundation Bonds.....	25 262.97
Sale of Bonds.....	50 961.25
From Am. Inst. M. E., for Building addition.....	2 500.00
	<hr/>
	286 234.78
Grand Total.....	<hr/>
	\$298 771.96

Payments

To Engineering Foundation:	
Income from investments, less collection charges..	\$25 262.97
Bonds purchased.....	53 771.97
Building Operating Expenses.....	86 514.64
Library.....	29 114.79
Library Service Bureau.....	22 086.88
Library Recataloging.....	13 422.50
Engineering Council.....	24 842.84
Am. Soc. M. E. Notes.....	5 000.00
Am. Soc. M. E. Interest on Notes.....	337.50
General Funds, Interest on Investment.....	360.00
Collect charges and exchanges.....	414.04
Engineering Societies Service Bureau.....	12 431.66
Permanent Improvement charged to Capital.....	10 183.15
	<hr/>
Total Payments.....	283 742.94
Cash balance December 31st, 1920.....	15 029.02
	<hr/>
	\$298 771.96

ASSETS AND LIABILITIES.

December 31st, 1920

Assets

Real Estate.....	\$1 957 354.31
Investments:	
Engineering Foundation Fund.....	502 834.80
Library Fund.....	93 043.75

Depreciation and Renewal.....	\$100 511.42
General Funds.....	7 500.00
Cash	15 129.02
Accrued interest receivable.....	2 586.70
Insurance prepaid.....	5 468.61
Bills receivable.....	2 500.00
Accounts receivable.....	11 274.67
Advances to Library Board.....	5 142.41
Advances to Engineering Societies Service Bureau.....	70.26
	<hr/>
	\$2 703 415.95

Liabilities

Founders Equity in Property.....	\$1 957 354.31
Due to General Reserve Fund.....	10 000.00
Due to Depreciation and Renewal Fund.....	103 396.41
Due to Engineering Foundation Fund.....	502 834.80
Due to Library Endowment.....	93 351.25
Bills Payable.....	12 500.00
Library Service Bureau, unexpended balance.....	710.27
Engineering Council, unexpended balance.....	6 314.19
Balance, December 31st, 1920.....	16 954.72
	<hr/>
	\$2 703 415.95

Respectfully submitted,

JOSEPH STRUTHERS, *Treasurer.***Report of the President of United Engineering Society for 1920****TO THE TRUSTEES OF UNITED ENGINEERING SOCIETY:**

Notwithstanding the continued high cost of services and supplies during 1920, the Society has fully administered its property and functions; but, at the close, the accounts show that in order to pay for several permanent improvements, make changes in investments for the greater security of the several funds, and meet the necessities of the Library, it was necessary to borrow from the uninvested portion of the Depreciation and Renewal Fund.

Although a number of important changes in the occupation of offices by Associate Societies had of necessity to be made, the entire building was fully occupied throughout the year, and a number of applications for space had to be refused. The building has been most carefully maintained and some deferred maintenance carried out, so that its present condition is generally better than at any time during the last few years.

Recommendations made by the Independence Bureau, employed by your Board, for improving the fire safety of the structure and its occupants have for the most part been effected, and a further report just received states that both structural and housekeeping conditions are excellent.

TOTAL MEMBERSHIP OF SOCIETIES.

The membership of the four Founder Societies at the end of the year was 44 655, and of the Associate Societies 22 609, so that a total of 67 264 engineers have headquarters in our building. Other technical societies holding meetings in the building have a large aggregate membership in addition.

On Sunday, April 25th, 1920, an impressive memorial service for Andrew Carnegie was held in the Auditorium under the joint auspices of the Authors Club, New York Public Library, Oratorio Society, St. Andrew's Society and United Engineering Society, at which the orators were the Hon. Elihu Root and Hon. John H. Finley.

A special committee had under consideration the admission of the Society of Automotive Engineers as a fifth Founder Society, but no conclusion on this matter has been reached.

A Committee on Memorials and Entrance Hall has been studying the placing of war and other memorials in the Engineering Societies Building, the furnishing of the Entrance Hall to make it more usable and attractive, and the establishment on the ground floor of a general information bureau to serve the various societies and their visiting members.

During the year, Messrs. Parker and Aaron, Counsel, drew the attention of the Trustees to recent decisions of the Courts of the State in certain matters relative to taxation as applicable to the building, in consequence of which such arrangements have been made with all Associate Societies that there will be no reduction in the net revenue received from assessments upon space occupied.

There has also been a revision of the rates charged for the use of the Auditorium and Assembly Rooms, which had not previously borne an adequate share of the general overhead expense; the new rates are still materially lower than those charged for other halls in the vicinity.

ENGINEERING SOCIETIES LIBRARY.

The Engineering Societies Library has continued its steady progress in size and service under the direction of Harrison W. Craver. The Library contains 150 000 books, pamphlets and maps, and is valued at \$311 000. Good progress has been made in the re-cataloging and re-arranging of the books; for this work special appropriations have been continued by the Founder Societies, and during the year \$13 422.50 were expended for the purpose.

The income and expenses of the Library during 1920 were as follows:

Debit balance (temporarily advanced by U. E. S.) at end of 1919.....	\$2 602.36
Contributions by four Founder Societies \$4 000 each...	16 000.00
Library Endowment income.....	5 027.63
Transfer from Library Service Bureau surplus in November	2 000.00
Income from Douglas Fund of Am. Inst. M. E.	5 497.60
Total	\$25 922.87
The expenses were.....	29 114.79
Difference (deficit).....	3 191.92

Library Service Bureau:

Actual cash receipts.....	\$22 797.15
Actual cash disbursements for the Service.....	22 086.88
	<hr/>
Surplus applicable to the general overhead of the Bureau.	\$710.27

The business transacted by the Library Service Bureau has increased from \$2 410.80 in 1915, to \$8 814.93 in 1918, and \$22 797.15 in 1920. Efforts are now being exerted to make this valuable service better known throughout the profession. The service rendered by this department of the Library has, during the past year, extended its usefulness to clients in all but four of the States and territories, as well as in 26 foreign countries.

ENGINEERING COUNCIL.

Engineering Council continued its activities on substantially the same lines as in 1919, retaining and operating its offices in both New York and Washington.

In April, the American Railway Engineering Association became the sixth member of Council on invitation from the United Engineering Society.

An Organizing Conference held on June 3d and 4th, 1920, in Washington, D. C., attended by delegates of many technical societies, led to the establishment of the Federated American Engineering Societies, acting through the American Engineering Council, which held its first meeting in November. The creation of this larger Council with ampler resources, of which three of the Founder Societies became Charter Members, indicated clearly that it would be unnecessary to continue Engineering Council. At the request, therefore, of Engineering Council and with the consent of the Founder and other societies interested, United Engineering Society by amendment of its By-Laws, terminated Engineering Council on December 31st, 1920, when the Washington office was taken over by the American Engineering Council, which will establish its headquarters in that city.

A history of Engineering Council has been prepared as a permanent record of this department of United Engineering Society.

Engineering Council's financial condition may be summarized as follows:

Resources available for 1920.....	\$31 157.03
Expenditures for 1920.....	24 842.84
	<hr/>
Cash balance December 31st, 1920.....	\$6 314.19
Other good assets.....	2 962.84*
	<hr/>
Total assets	\$9 277.03
Estimated expenses yet to be met.....	150.00
	<hr/>
Probable balance	\$9 127.03

This balance when finally determined will be applicable to the reduction of any obligations which the Board of Trustees may consider to be outstanding.

* Omitting debt of National Public Works Department Association \$14 294.77, which is uncollectable.

ENGINEERING FOUNDATION.

Engineering Foundation continued its close relations with National Research Council and its contributions to the support of the Division of Engineering. Plans for increasing the endowment were developed by its Chairman, Mr. Charles F. Rand, during the year and a number of persons have been approached and indicate interest. Mr. Ambrose Swasey, in October, generously added \$200 000 to his previous large gifts, making the total endowment fund \$502 834.80. No other gifts have been received, although one friend has offered to give \$50 000 if nine others would give equal amounts.

The annual income is now at the rate of \$25 000. The accumulated unexpended balance on December 31st, 1920 was \$16 091.76. Important research projects have been assisted, both directly and co-operatively with the Research Council. The field of possible usefulness has been much increased by the most recent addition to the funds.

ENGINEERING SOCIETIES SERVICE BUREAU.

During the year, 2 171 men were registered and 1 479 were placed in positions.* This service continued to be free both to employers and to engineers seeking engagements. It was administered independently by the Secretaries of the Founder Societies. At the end of the year, negotiations were in progress for transferring this Bureau to the American Engineering Council.

JOHN FRITZ MEDAL BOARD OF AWARD.

The John Fritz Medal Board of Award, composed of representatives of the Founder Societies, awarded the medal for 1920 to Mr. Orville Wright for achievement in the development of the airplane. The medal was presented before a large audience on May 7th, 1920.

FINANCES.

The income of U. E. S. for 1920 was.....	\$97 231.95
The expenses were.....	77 486.38

Balance for the year.....	\$19 745.57
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Funds held by U. E. S., December 31st, 1920:

Engineering Foundation Fund.....	\$502 834.80
Library Endowment.....	93 351.25
General Reserve.....	10 000.00
Depreciation and Renewal.....	103 396.41

Total	\$709 582.46
The real estate owned by U. E. S. cost (and at present cannot be reproduced for that sum).....	\$1 957 354.31

Total net assets (see Auditor's report).....	\$2 703 415.95
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At the end of 1920, there was charged to Real Estate \$10 183.15 expended during 1920 for permanent betterments to the building.

* See *Proceedings*, Am. Soc. C. E., January, 1921, p. 11.

INVESTMENTS.

Throughout the year United Engineering Society had the advice of the Bankers Trust Company as to the investment and reinvestment of its several funds. This has been particularly important on account of the great depreciation in market value of securities and the uncertainty in many cases of regularity in interest payments. Up to the present, however, there has been no default in interest on any of the securities held in any of the funds. The reports of the Treasurer and Auditor give details of this matter. Of the Engineering Foundation Endowment, \$303 875 are in securities and cash deposited with the Cleveland Trust Company, of Cleveland, Ohio. For all other securities and funds, the Bankers Trust Company of New York is the custodian.

ACCOUNTS.

The Finance Committee has instituted changes in the distribution of the various financial accounts tending to simplification and clarity in the book records.

The various accounts of the Society have been examined, audited and reported on by Messrs. Barrow, Wade, Guthrie and Company, Public Accountants.

Credits to the Depreciation and Renewal Fund have been as follows:

Year	From Operating Balance.	Accrued interest added to the fund.
1907	\$5 000.00	.....
1908	5 000.00	.....
1909	5 000.00	.....
1910	5 000.00	.....
1911	5 000.00	.....
1912	5 000.00	.....
1913	10 000.00	.....
1914	10 000.00	\$1 441.39
1915	5 000.00	2 404.28
1916	10 000.00	2 610.45
1917	nil	3 581.29
1918	8 000.00	3 126.37
1919	10 000.00	4 035.22
1920	nil	4 016.16
Total	\$83 000.00	\$21 215.16

This fund was decreased \$818.75 due to changes in investments made during the year for greater security, on December 31st, it amounted to \$103 396.41.

At a meeting of the Trustees, held November 19th, 1914, it was resolved that, beginning with the year 1915, the Depreciation and Renewal Fund should have the sum of \$10 000 added to it each year in addition to the interest from securities held in the Fund. This action was re-affirmed in 1919. The prescribed addition to the Fund was made in only two years, 1916 and 1919.

CHANGES IN BOARD MEMBERSHIP.

Record is made of the death of two Trustees during the year, with grateful recognition of their esteemed and valued services: Edmund Gybbon Spilsbury, on May 28th; Samuel Sheldon, on September 5th, 1920.

The new members joining the Board of Trustees during the year were: George H. Pegram, representing Am. Soc. C. E.; J. V. W. Reynders, representing Am. Inst. M. E.; George M. Basford, *vice* E. Gybbon Spilsbury, deceased, Am. Soc. M. E.; Bancroft Gherardi, *vice* Samuel Sheldon, deceased, Am. Inst. E. E.

The members retiring by rotation at the end of this year are: Clemens Herschel, representing Am. Soc. C. E.; B. B. Thayer, representing Am. Inst. M. E.; W. M. McFarland, representing Am. Soc. M. E.; L. T. Robinson, representing Am. Inst. E. E.

ACKNOWLEDGMENTS.

Messrs. Parker and Aaron, Counsel, continued to render important service, and gave notable advice during the year relative to: (1) Forms for Deed of Gift for Engineering Foundation Endowment, and Custodianship of Trust Funds; (2) on the relation of a decision of the Court of Appeals of New York to tax exemptions; (3) forms for Associate's Agreement; and (4) legal phases of the discontinuance of Engineering Council as a department of United Engineering Society.

It is a pleasure to acknowledge to the various committees appreciation of their loyal service. The operation of the Engineering Societies Building has continued to be directed by the House Committee, consisting of the Secretary of United Engineering Society, Mr. Alfred D. Flinn, Chairman, with the Secretaries of the Founder Societies, Messrs. H. S. Crocker, Bradley Stoughton, Calvin W. Rice and F. L. Hutchison, to whom this recognition of their capable and careful performance of duties is tendered.

Mr. Alfred D. Flinn has ably fulfilled the duties of Secretary during the year. Dr. Struthers has again acted as Treasurer and the thanks of the Board of Trustees is due to him for his conscientious service given voluntarily and gratuitously.

Further details of the activities of the Engineering Societies Library, Engineering Foundation and Engineering Council are given in their several annual reports. The affairs of United Engineering Society are in a satisfactory condition.

Very respectfully,

J. VIPOND DAVIES, *President.*

Annual Report of Engineering Foundation

TO THE TRUSTEES OF UNITED ENGINEERING SOCIETY:

By letter of October 25th, 1920, Mr. Ambrose Swasey added \$200 000 to his gifts to United Engineering Society for the endowment of Engineering Foundation, making the total a half-million dollars. He also gave the income of the new fund from the beginning of the year.

Further increase of endowment has been sought by the Chairman as a Special Committee of one. Many friends of the Foundation have helped. Letters have been exchanged and interviews had with men of large wealth in many parts of our country. Some encouragement has been received. One friend offered to give \$50 000 if nine other men would make equal gifts.

Forms for Deed of Gift and Declaration of Trust, after study for more than a year, were adopted December 10th and approved by the Trustees December 21st,

1920, in accordance with a report by Mr. Edward Dean Adams, prepared with the co-operation of Parker and Aaron, Counsel to United Engineering Society. This valuable report includes custodianship and administration of the endowment funds.

Study was given to the policy as to patents secured in connection with the work of Engineering Foundation, and standard forms for use in connection with grants of assistance for research projects. Conclusions have not been reached, although progress has been made.

Close relations with the National Research Council were continued. Increasing co-operation has been given by the Founder Societies. Other technical societies, also, have shown appreciation of Engineering Foundation, and aided in making its work and needs known.

RESEARCH IN FATIGUE PHENOMENA.

The research in fatigue phenomena of metals has progressed at the Engineering Experiment Station of the University of Illinois. Interesting partial results have been secured. Engineering Foundation appropriated \$30 000 to be advanced in instalments through two years, beginning November, 1919. To December 31st, 1920, payments amounting to \$22 000 were made. Attracted by the facilities created by the financial support of the Foundation and the co-operation of the Division of Engineering of National Research Council with the University of Illinois, the General Electric Company entered into an agreement for an extension of the programme to cover nickel steels of special interest to it. For this purpose, the Company will contribute \$30 000, thus duplicating the grant of the Foundation. It has been reported that other industrial corporations are considering similar action.

Engineering Foundation, the Founder Societies and other technical organizations, together with Federal and State governments, co-operated with the Division of Engineering in establishing an Advisory Board for Highway Research. This Board is planning a National programme and seeking to bring about material economies in the proposed vast expenditures for roads by obtaining and disseminating results of research relating to highway construction, maintenance, traffic, vehicles and economics.

An Hydraulic Research Committee has collected information about all important known hydraulic laboratories in the United States. From this material, a bulletin is being prepared for publication at an early date.

Dr. E. E. Southard was aided by a small grant in the study of "Mental Hygiene of Industry", but the work was stopped in its preliminary stages by Dr. Southard's sudden death in February. An offer from the Harvard Medical School to co-operate in resuming these studies was declined for lack of funds.

Engineering Foundation co-operated with National Research Council in examining the possibilities of bringing about useful co-operation in industrial personnel research. A successful conference was held in Washington, D. C., November 12th, 1920. The outcome cannot be determined until a second conference shall have been convened later in the winter.

A study of the predictive value of psychological tests for engineering students was brought to the attention of the Foundation by Dr. Walter V. Bingham, Chairman of a Committee of National Research Council. Professor Robert M.

Raymond, of the Foundation, after investigation, reported in May that it was not advisable to give assistance to the proposed study at this time.

Hydraulic weir tests conducted at the laboratory of the Massachusetts Institute of Technology, Cambridge, by Clemens Herschel, Past-President, Am. Soc. C. E., with the aid of funds from Engineering Foundation, produced a new form of weir and a very simple formula for determining the quantity of liquid flowing over the weir. The experiments and results are described in a report submitted by Mr. Herschel in March, 1920.

TESTS ON WEAR OF GEARS DISCONTINUED.

Tests on wear of gears were resumed at Leland Stanford Junior University during the summer, by Professors Guido H. Marx and Lawrence E. Cutter. One set of tests was completed, yielding limited results. The appropriation of \$1 000 made five years ago having been expended, and the Board being unwilling to devote further funds, the tests were discontinued.

At the suggestion of the American Society of Mechanical Engineers, there was appointed at the December meeting of the Foundation a Committee on Industrial Education and Training to examine the practicability and desirability of an extended investigation of the education and training of men for the industries. Sources of funds for this work were indicated.

FOUR PAMPHLETS PUBLISHED.

During the year, Engineering Foundation published four pamphlets, being reprints of reports made to it and printed in technical journals, as follows:

- 1.—The Mental Hygiene of Industry, March, 1920; from *Industrial Management*, February, 1920.
- 2.—Trade Unionism and Temperament, April, 1920; from *Industrial Management*, April, 1920.
- 3.—The Modern Specialist in Unrest, June, 1920; from *Industrial Management*, June, 1920.
- 4.—An Improved Form of Weir for Gauging in Open Channels, May, 1920; from *Mechanical Engineering*, June, 1920.

Because of additional income from Mr. Swasey's third gift, the possibility of a deficit resulting from the programme for the current three years ending with 1922, was removed. Therefore, the assumption of the contingent liability by Mr. Edward Dean Adams, being no longer necessary, was cancelled by the Foundation at its December meeting.

Four regular and two special meetings were held during the year. The meeting of December 10th was preceded by a dinner to Mr. Swasey, at which an engrossed certificate was presented, expressing appreciation of his gifts.

Two members of the Board died during the year: Edmund Gybbon Spilsbury on May 28th, and Dr. Samuel Sheldon on September 5th, 1920.

Publicity for the work and needs of Engineering Foundation has been extended by six months' engagement, beginning November 1st, 1920, of part-time services of Mr. James T. Grady, Director of the Department of Public Information, of Columbia University. Through Mr. Grady's activities, news items and interesting statements of some length have appeared in the daily press in all parts of the

country. Other statements about the Foundation have appeared in many technical journals in both America and Europe. Leaflets of information have been widely circulated. A special series has been planned, known as "Research Narratives", which is to be mailed to a carefully selected list of men prominent in industry and finance. The name, purpose, work and needs of Engineering Foundation are becoming widely known.

A financial statement, required by the By-Laws, is attached.

Respectfully,

CHARLES F. RAND, *Chairman.*

Alloys Research Association

An Alloys Research Association is being formed with an Informational Service as the first step. This is to be co-operative on the part of those interested in metals and their alloys. An Advisory Committee, composed of seventeen prominent technical men, was formed some time ago and this Committee has evolved a plan, in conference with the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers, whereby a service of a different scope from any now existing can be carried on for the benefit of those interested. It was felt that it is time to broaden the sources of knowledge and to have a co-operative service that will critically and analytically digest the great mass of data that has been accumulated, but is now largely inaccessible since technical men have not the time to spend in searching even current literature.

It is now planned to create a special scientific staff composed of a Director and a corps of assistants who will give all their time to rendering a service of two distinct types: (1) Current Information Service, supplying information as to new results; (2) Reference Service, supplying as fully and promptly as practicable all existing information relating to any phase of a subject. The Board of Managers, appointed by three of the divisions of the National Research Council, is constituted of Alfred D. Flinn, M. Am. Soc. C. E., Secretary of the Engineering Foundation, Dr. R. B. Moore, of the U. S. Bureau of Mines, and Mr. W. M. Corse, Secretary of the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers.

SAMPLE ANALYTICAL ABSTRACT.

Nishikawa, S. and Asahara, G.

Some Studies of Metals by Means of X-rays.—Physical Review 15, 38-45 (1920).—(1) *Effect of rolling.* By passing a narrow beam of heterogeneous rays through a thin sheet of metal, a pattern may be photographically recorded which depends on the crystalline structure of the metal. The authors have used this phenomenon to study the effect of rolling and subsequent annealing on various metals. (a) In the case of *aluminum, cadmium, copper, zinc, and brass*, rolling produced ill-defined patterns, all with a symmetry related to the direction of rolling but each characteristic of a particular metal. (b) *Silver and tin* gave similar ill-defined patterns immediately after rolling, but these gradually changed during the following two or three weeks to the distinct spot patterns characteristic of annealed samples. For these metals, then, the crystal growth which accompanies

annealing takes place at room temperatures. Even at 5° the recovery from rolling goes on, though more slowly (See Plate I). (c) *Lead* and *thallium* gave irregularly distributed spots which showed no symmetry related to the direction of rolling. For these metals, then, either the crystal structure is not distorted by the rolling or the recovery is quite rapid. In the case of thallium, however, the pattern was not the same as after the sheet had been annealed. (2) *Effect of annealing after rolling was studied* with a special furnace which enabled the patterns to be obtained for a sheet of metal kept at any desired temperature up to 800°. Metals differ greatly in their response to annealing. Thirty minutes at 80° is sufficient to obliterate the effects of rolling in the case of *silver* and *tin*, whereas 2 hours at 800° is not sufficient for *copper*. The effects of annealing *cadmium* at 100°, 150°, 200°, and 250° are shown in the photographs reproduced in Plate II. This method should be valuable for studying the effect on metals of various mechanical and heat treatments.

Transformation Point of Thallium and Tin as Determined by X-ray Patterns.—When the pattern produced by a thin sheet of annealed thallium was photographed for a series of ascending temperatures, it was found that as the transformation point was passed, the pattern suddenly changed to one corresponding to a single crystal. On cooling the sheet, the change was reversed (see Plate III). Taking account of the lag, the temperature of transformation was found to be about 227°, in good agreement with determinations by other methods. *Tin* was also investigated in this way, especially in the neighborhood of 160°, but no change of pattern was observed.

INDEX ENTRIES.

For the foregoing abstract, eleven index entries would be made, such as the following:

Aluminum

Effect of rolling, on X-ray patterns—S. Nishikawa and G. Asahara.

Cadmium

Effect of rolling and subsequent annealing, on X-ray patterns—Nishikawa and Asahara.

Thallium

Effect of rolling, on X-ray patterns—Nishikawa and Asahara.

Transformation point at 227°—Nishikawa and Asahara. Etc., etc.

The Research Extension Division of the National Research Council, Washington, D. C., which is aiding in the organization of the Alloys Research Association, will be glad to supply fuller details about this Informational Service.

John Fritz Medal Awarded to Sir Robert Hadfield

The John Fritz Medal for 1921 has been awarded to Sir Robert A. Hadfield, of London, England, for the invention of manganese steel. During the World War, 9 000 000 Hadfield manganese steel helmets were used by the British, American and Belgian Armies; these helmets were replacing the French type when the war ended and are superior to the German helmets, which were made of nickel-chromium steel, and were 12 oz. heavier.

The previous recipients of this medal have been as follows:

John Fritz.....	1902	Robert Woolston Hunt.....	1912
Lord Kelvin.....	1903	John Edson Sweet.....	1914
George Westinghouse.....	1906	James Douglas.....	1915
Alexander Graham Bell.....	1907	Elihu Thomson.....	1916
Thomas Alva Edison.....	1908	Henry Marion Howe.....	1917
Charles Talbot Porter.....	1909	J. Waldo Smith.....	1918
Alfred Noble.....	1910	George W. Goethals.....	1919
Sir William Henry White.....	1911	Orville Wright.....	1920

More Data on Costs of Railroad Operation

S. M. Felton, M. Am. Soc. C. E., President of the Chicago Great Western Railroad Company, calls attention to an item* in "Brief Notes", comparing the deficit incurred by the railroads of the United States under Federal control and that under private operation. The principal statements made were as follows:

"The two years and two months of Federal control * * * cost the taxpayers \$902 000 000, according to latest returns. * * * Assuming that the Interstate Commerce Commission, in the final accounting, will allow all the maintenance charges reported by the carriers, only six months of private operation cost the taxpayers \$634 000 000 * * * or more than two-thirds of the cost for the two years and two months of Federal control. Reducing these figures to costs per month, there is obtained about \$34 700 000 per month under Federal control, and \$105 700 000 per month since the return to private control."

These statements, he says, when made without any qualification or explanation, are too misleading to allow them to pass unnoticed. The figure given regarding the deficit under Government control is the estimate made by Director General Hines in a statement to the House Committee on Appropriations. This Committee rejected his estimate, pointing out that he had not included \$60 000 000 for interest on Government funds that had been used, \$25 000 000 which must be paid to the Short Line Railroads for losses incurred by them, and \$250 000 000 because of shrinkage in the value of Government bonds and railroad securities which the Railroad Administration had bought. The House Committee on Appropriations estimated that when these and all other proper items had been included "the total loss to the Government chargeable to Federal control and operation of railroads would amount to \$1 375 000 000."

Mr. Sheldon states that the estimate made regarding the deficit incurred in the six months of private operation probably is substantially correct, but that before this deficit is attributed to private operation the following facts should be considered:

1.—During the last six months of government control the operating expenses of the railways increased so much that the railways ceased to earn any net operating income. The expenses increased from \$11 590 000 a day in August to \$14 310 000 a day in February, which was the last month of government control. Because of this great increase in expenses, the operating expenses and taxes of the railways in February exceeded their total earnings by \$12 000 000. In the last two months of Government operation, January and February, the railways earned only 1.84% of the Government guarantees to them for those months. If the Govern-

* *Proceedings, Am. Soc. C. E., November, 1920, page 864.*

ment had continued to operate the railways and had earned no larger a part of the guarantees in the six months from March 1st to September 1st than it did in January and February, its deficit for those months would have been about \$458 000 000.

2.—On July 20th, 1920, the Railroad Labor Board, a Government body, awarded to the employees of the railways an advance in their wages amounting to about \$52 000 000 a month. This advance in wages was effective from May 1st to September 1st, and therefore for these four months exceeded \$200 000 000. If the Government had continued to operate the railways and during these four months had had to pay this advance in wages, it is reasonable to estimate that its deficit would have been about \$660 000 000.

3.—Under Government control the railways were very inadequately maintained and the companies, after they were returned to private operation, had to spend greatly increased amounts of money for maintenance to put the properties in condition to handle a record-breaking business.

4.—The railways since they were returned to private operation have had to pay much higher prices for fuel than had to be paid under Government control.

In view of the foregoing facts, says Mr. Sheldon, it is obvious that the large deficit incurred was not due to the way that the properties were operated under private management. In fact, the efficiency with which the facilities were used was greatly increased, which had the result of making the deficit smaller than it otherwise would have been and smaller than it probably would have been under Government control.

It should be said in this connection, he adds, that Congress recognized the fact that a deficit was bound to be incurred during the early months of private operation simply because the operating expenses had increased so much more in proportion under Government control than the rates had been advanced, and that it would take some time for the Interstate Commerce Commission to determine what advances in rates were required to stop the incurring of the deficit. When Congress guaranteed to the railways during the first six months of private operation the same standard return that had been guaranteed to them under Government control, it did so in express recognition of the fact that a large deficit was unavoidable.

Henry Saxon Snell Prize

The Henry Saxon Snell Prize was founded to encourage improvements in the construction or adaptation of sanitary appliances, and is to be awarded by the Council of The Royal Sanitary Institute, London, England, at intervals of three years, the funds being provided by the legacy left by the late Henry Saxon Snell (Fellow of the Institute).

The Prize in the year 1921 will consist of Fifty Guineas and the Medal of the Institute, and is offered for an Essay on "Suggestions for a System of Central Hot Water Supply and Heating, Adapted to Modern Housing Schemes, and to Existing Groups of Houses."

The following points should be dealt with:

- 1.—Central installation.
- 2.—Appliances for and methods of distribution.
- 3.—Methods of conserving the heat.

- 4.—Provision for continued supply during repair of system.
- 5.—Cost, initial and service.
- 6.—Combination with other services for reducing expenses.

GENERAL CONDITIONS.

The Essay is to consist of not more than 5 000 words, to be typewritten on foolscap, one side only, and to be illustrated by drawings or sketches; two competitors may combine in sending in an essay and drawings.

Essays must be delivered on or before August 31st, 1921, addressed to the Secretary of The Royal Sanitary Institute, 90 Buckingham Palace Road, London, S. W., 1, and the following requirements must be observed:

- (a).—The Essay is to be submitted without the name of the competitor.
- (b).—The Essay is to bear a motto, legibly marked on the right hand lower angle of the first sheet.
- (c).—The Essay is to be enclosed in an envelope, bearing the words "Henry Saxon Snell Prize," and the Competitor's motto at the right hand lower angle, and to be directed to the Secretary of The Royal Sanitary Institute.
- (d).—The Essay is to be accompanied by a letter containing the competitor's name and address, which is to be enclosed in a separate envelope, sealed with a blank seal, and having on the outside "The Henry Saxon Snell Prize", and the same motto as that attached to the Essay submitted.

Australian Members Plan Local Section

At a meeting of the local members of the American Society of Civil Engineers, held in Melbourne, Australia, plans were discussed for an attempt to form a Section of the Society, to include members in that vicinity. A communication from J. T. Noble Anderson, M. Am. Soc. C. E., Chairman of the meeting, encloses a clipping from the *Melbourne Age*, which indicates the nature of the publicity for the Society which this group of about fourteen members has been able to obtain. Abstracts from this account follow:

At a meeting of members of the American Society of Civil Engineers, in giving the toast to the Parent Society, Mr. J. M. Coane enlarged on the advantage to Australian engineers of belonging to this society.

In reply, the Chairman, Mr. J. T. Noble Anderson, stated that both in number of members and the importance of the work carried out, this Society was now the premier society of the world, and that by joining it an engineer not only had the advantage of the most up-to-date work, but got in touch with the most cosmopolitan society in the profession.

BRIEF NOTES

Panama Canal tolls in January amounted to \$1 095 864, exceeding by \$80 000 the former record. Vessels passing through the canal numbered 282.

The Interstate Commerce Commission announces that it has approved a loan of \$3 835 000 to the Southern Railway Company to aid in providing new equipment. The Company is required to finance \$8 925 000 to meet the loan of the Government.

Officials of the central region of the Pennsylvania Railroad at Pittsburgh, Pa., announce that technical men to the number of about 1 500 would be given a holiday of one day each week during the freight and passenger depression.

George Otis Smith, Director, U. S. Geological Survey, on January 18th, 1921, told a Senate Committee that inasmuch as coal was a basic necessity, he thought the time had come when it should be classed with public utilities, and proper arrangements made to guarantee adequate supply at fair prices.

Conditioned on permission of the U. S. Congress, the Philippine Government will issue \$25 000 000 in gold non-taxable 20-year 3½% irrigation and public works bonds, to cover a programme of irrigation and flood control in Luzon and other islands.

England is credited with now being in the front rank as to aviation, and is not only leading the rest of the world in development of military craft, but passenger and express airplanes as well. In fifteen months, 82 000 passengers and 200 000 lb. of freight were carried 1 000 000 miles in 48 000 flights.

The Interstate Commerce Commission issues a statement on the status of the revolving fund of \$300 000 000 created by Section 210 of the Transportation Act of 1920, for the purpose of enabling the rail carriers of the country properly to serve the public during the transition period immediately following the termination of Federal control. The total of loans approved, as of December 31st, 1920, is \$205 721 357. Additional loans aggregating \$51 653 594 may be made on pending applications. This will leave \$2 625 049 of the revolving fund available for additional loans.

U. S. Commissioner of Immigration Wallis stated before Congress that there was need for inspection of aliens before leaving Europe, and for rigid examination after arrival at American ports. He recommended that facilities be established overseas for such inspections, and declared 90% of immigrants arriving under the existing system would be denied permission to sail if examined at ports of embarkation by American officials. The Commissioner stated that reports of the Public Health Service indicated that Eastern Europe to-day is in the grip of four epidemics—typhus, typhoid, dysentery and tuberculosis. He declared that Europe was "literally moving to the United States."

Herbert C. Hoover, M. Am. Soc. C. E., has stated that the whole 400 000 000 people in Europe are gradually sinking into a lower standard of living than was ever contemplated in this generation—the world is not suffering from overproduction, it is suffering from underconsumption. Recovery cannot take place and surplus goods cannot be consumed unless the United States is prepared to take some hand in the situation in Europe and devise some method by which it can give assistance on a proper and suitable foundation of business. All such measures fall into three classes—first, those emergency measures undertaken by the Government soon after the Armistice, and Government assistance cannot continue for long for a hundred reasons; second, sheer charity, which is only justifiable in an emergency of complete helplessness; third, by building up the normal processes of business, and in that alone lies any permanency and any real recovery for the world situation.

ACTIVITIES OF LOCAL SECTIONS***Meetings of Duluth Section**

At the meeting of the Duluth Section held on December 20th, 1920, 21 members present, the report of the Committee on Compensation of Engineers was read by Mr. E. W. Kelly, Chairman, and on motion, duly seconded and carried, was approved, with instructions to the Secretary to send a copy to Engineering Council.

Mr. W. H. Hoyt, Chairman of the Committee appointed to report on the proposed bill for licensing engineers and architects in the State of Minnesota, reported that the Committee had given the subject careful study, but was not yet ready to offer a definite written report. The proposed bill was discussed, and on motion, duly seconded and carried, it was decided to have a special meeting of the Section after Mr. Woodbury's return from the meeting of the Minnesota Joint Engineering Board.

A letter from Director Anson Marston in regard to a proposed conference of the officers of the Local Sections in the district comprising the Detroit, Duluth, Northwestern and Iowa Sections, was read. On motion, duly seconded and carried, the President was authorized to arrange to be present at this conference, together with any other officers who could so arrange.

Mr. Frank Hutchinson, Chairman of the Library Committee, requested that the members send in lists of books on engineering subjects which they would consider to be desirable for the Public Library of the city.

On motion, duly seconded and carried, the Committee on Entertainment, consisting of Messrs. Pope, Cokefair and Bryan, was instructed to arrange for another social meeting similar to the one held in 1919.

It was suggested that one or more members of the Duluth Section should attend the Annual Meeting of the Society at New York City on January 19th, 1921. It was moved, seconded and carried, that the Board of Directors of the Section give consideration to this suggestion, with a view to inducing some of the members to make the trip.

MEETING OF JANUARY 17TH, 1921.

At a meeting of the Duluth Section held on January 17th, 1921, 22 members and 2 guests present, a circular letter from the Secretaries of the four Founder Societies with reference to an official Biographical Directory of the members of these Societies, was read. It was moved, seconded and carried, that it was the sense of the Duluth Section that it does not approve of the publication of this Directory.

A letter from the Denver Section dated January 13th, 1921, and enclosing a report by a committee of that Section in regard to the Smith Bill (H. R. 12 466) authorizing the granting of certain irrigation rights in the Yellowstone National Park, was read. This correspondence was referred to the Special Committee consisting of Messrs. Ash, Darling and Carson, and this Committee reported that it had also considered a letter from the Dallas Section. In this report,

* For list of Local Sections, Officers, Meetings, etc., see p.

the Chairman of the Committee related the history of water power legislation since the time of the Civil War.

On motion, duly seconded and carried, the report of the Committee was approved, and the Secretary was instructed to send copies to the Senators and Representatives in Congress from this district, and to the Secretaries of all Local Sections of the Society; the Committee was also requested to condense the information that it might be sent to all members with a request that personal letters be communicated to Senators and Representatives from the district.

Mr. Christie, Secretary of the Library Committee, reported that the heirs of the late John Francis Coleman, M. Am. Soc. C. E., had offered to the Duluth Section certain copies of the Van Nostrand Engineering Magazine. On motion, duly seconded and carried, the offer was accepted, and the Secretary was instructed to prepare an appropriate resolution of thanks to be transmitted to the widow of Mr. Coleman.

Frank Hutchinson, M. Am. Soc. C. E., presented a paper entitled "Hydraulic Disposal of Blast Furnace Slag", describing in detail the former method of handling slag, the great saving being effected by the process in use by the Shenango Valley Improvement Company, New Castle Junction, Pennsylvania. The paper was illustrated by lantern slides, and was followed with great interest by the members present.

Annual Meeting of the Southern California Section

The Annual Meeting of the Southern California Section was held on December 8th, 1920, at the University Club, Los Angeles, Cal., 42 members and 7 guests present. President Barnard introduced Messrs. Frank C. Wight, Associate Editor of *Engineering News-Record*, who spoke of his observations during a tour of the country; John G. Heft, former Assistant Engineer, Sonoma County, California; Ward Hall, Assistant Engineer, California Railroad Commission; D. F. Black, Charter Member of the Section; W. M. Steele, Vice-President of the Foundation Company, who spoke briefly on the close relation of western engineers to their field work as compared with the more isolated condition of eastern engineers; T. R. Minn, Engineer of the U. S. Department of Public Roads, who described the heavy road construction now under way in the San Gabriel Canyon.

The speaker of the evening, Mr. J. A. Griffin, City Engineer of Los Angeles, Cal., outlined the plan of the proposed new outfall sewer for that city, pointing out the overtaxed condition of the present sewer. He stated that before relief work could be completed, the present outfall system would become a menace, and pointed out various proposed methods and types of construction which were based on a contemplated growth of the city to 3 430 000 by 1950. The subject was discussed by Messrs. E. T. Wheeler, R. L. Russell and H. W. Dennis.

A letter and resolution from the Texas Section of the Society was read, requesting that the Section endorse its resolution "urging the passage of an amendment to the Federal Water Power Act exempting the National Parks from use for water power purposes". On motion, duly seconded and carried, this matter was referred to the Committee on Public Affairs, consisting of Messrs. Lippincott, Leeds, Hawgood, Mulholland and Hill.

On motion, duly seconded and carried, the report of the Committee on Revision of the Constitution and By-Laws was adopted, and it was ordered that the proposed letter-ballot covering the amendments to the Constitution and By-Laws should be voted on item by item, separately, so that the proposed increase in dues would not be joined with any other issue.

REPORTS OF COMMITTEES.

The Committee on Building Laws and Regulations submitted a report, and was discharged.

Mr. J. N. Irving, Chairman of the Committee on Public Health and Sanitation, made a brief report, which was accepted and the Committee continued.

Mr. E. A. Bayley, of the Committee on Public Affairs, reported that no business had been transacted, and the Committee was discharged.

A report from Mr. T. C. Leeds, Chairman of the Committee on Universal Military Training, was read, and the Committee was discharged.

The report of the Committee on City Planning was read and discussed, and the Committee continued.

The Committee on Terminal Investigation, having concluded its services, was ordered discharged.

A report from the Committee on Application for Membership in the Parent Society was read, and the Committee discharged.

Mr. E. T. Flaherty, of the Committee on Building Ordinance, read a report, which was adopted, and the Committee discharged.

The Committee on National Board and Jurisdictional Awards was ordered discharged.

Mr. H. Hawgood, of the Committee on California Engineering Council, read a report which was ordered filed, and the Committee discharged.

Mr. F. E. Trask, Chairman of the Committee on Registration and Licensing of Engineers in California, read its report, which was adopted and the Committee discharged.

Mr. F. L. Bowen, Chairman of the Committee on Standard Specifications for Cement Concrete Pipe, advised the meeting that the Committee, having only recently been appointed, would require more time, and the Committee was continued.

Mr. E. G. Sheibley, Chairman of the Committee on Public Library, read its report and certain resolutions, and this report was adopted and the Committee continued.

The report of the Committee on Co-operation with Federal Bureaus, was read by Mr. A. L. Sonderegger, Chairman, and the resolution proposed therein was adopted, the Secretary being requested to send copies to the State Water Commission and to Representatives and Senators in Congress.

On motion, duly seconded and carried, all committees and sub-committees of the Committee on Development were ordered discharged. A rising vote of thanks was extended to Messrs. George G. Anderson and H. Hawgood for their untiring efforts in the work of the Committee on Development and on the Board of Direction.

Mr. Hawgood read a list of nominees for officers of the Parent Society, and called upon the membership to vote the regular ticket, pointing out that by the election of these candidates it was hoped that the affairs of the Society would become democratic. Mr. Anderson expressed the hope that the new administration of the Society would be more progressive and liberal minded.

The Secretary announced the election of officers for 1921, as follows:

H. W. Dennis, President; R. J. Reed and F. D. Howell, Vice-Presidents; F. G. Dessery, Secretary; E. R. Bowen, Treasurer; the Board of Directors is composed of Messrs. H. W. Dennis, R. J. Reed, F. D. Howell, E. R. Bowen, F. G. Dessery, G. G. Anderson and W. K. Barnard.

The Past-Presidents of the Section are J. B. Lippincott, C. T. Leeds, W. Mulholland, H. Hawgood, L. C. Hill, G. G. Anderson and W. K. Barnard.

MEETING OF JANUARY 12TH, 1921.

At a meeting of the Southern California Section held on January 12th, 1921, 72 members and guests present at the dinner, the following guests were introduced: Messrs. H. L. Doolittle, President, Los Angeles Chapter of the American Society of Mechanical Engineers; Mark Walker, President, Los Angeles Chapter of the American Chemical Society; and R. W. Sorensen, President, Los Angeles Section of the American Institute of Electrical Engineers.

The Secretary announced the result of the recent printed ballot on Amendments to the Constitution and By-Laws of the Section. All amendments as proposed were carried by a large majority, excepting the proposal to increase the dues from \$3 to \$5 per annum, which failed to receive a majority vote.

The Secretary read a letter from the Los Angeles Chapter of the American Association of Engineers regarding the withdrawal of that Chapter from the Joint Technical Committee. On motion, duly seconded and carried, it was voted as the sense of those present that this request should be granted, and that the matter should be referred to the Board of Directors to take the necessary action and advise the Joint Technical Committee.

The unanimous report of the Committee on Public Affairs in regard to the Federal Water Power Act, was read, recommending that the action requested in the communication from the Texas Section be not endorsed. After discussion, the report was accepted, and it was ordered that no further action be taken in the matter at this time.

The speaker of the evening, Dr. Ford A. Carpenter, Consulting Meteorologist, presented an address on the "Clouds of California", accompanied by many beautiful and well selected lantern slides, most of the views shown having been taken from balloons, dirigibles, airplanes and hydroplanes. The speaker gave a brief description of cloud formation, types, structure and occurrences. The evening had been arranged as a ladies' night, and the subject presented was of intense interest to the ladies, as well as to the members present.

The membership of the Southern California Section is now 155.

Annual Meeting of the Nebraska Section

The thirty-third regular meeting (the Annual Meeting), of the Nebraska Section was held at Lincoln, Nebr., on January 15, 1921, 16 members and 2 guests present.

The President appointed as Tellers to canvas the Ballot for Officers, Messrs. Cochran, Grup and Erickson, who later reported the results of the canvass of the 33 ballots received, and the President declared the election of the following:

Rodman M. Brown, President; John L. Hershey, Senior Vice-President; George W. Bates, Junior Vice-President; Homer V. Knouse, Secretary-Treasurer.

Roy M. Green, Assoc. M. Am. Soc. C. E., President of the Western Laboratories, presented a paper entitled "Bitulithic Specifications". He outlined the specifications under which contracts have been made for bitulithic pavements, and made certain recommendations regarding desirable modifications. The paper was discussed quite fully by the members present.

Mr. George W. Bates presented the proposed bill to be introduced in the 1921 session of the State Legislature for the registration of professional engineers and surveyors. It was moved, seconded and carried, that instead of the minimum age limit being fixed at 21 years, no age limit should be specified. It was further moved, seconded and carried, that a section should be added to provide for a seal for registered professional engineers or registered surveyors.

On motion, duly seconded and carried, the President was instructed to see that the Legislative Committee transmit to the Joint Committee of the Nebraska Assembly of the American Association of Engineers and the Nebraska Chapter of the American Institute of Architects, the foregoing motions as being suggestions of this Section, and to urge the adoption of the proposed changes. It was moved, seconded and carried, that the Section endorse the proposed bill, with the changes as adopted.

It was moved, seconded and carried, that at future Annual Meetings the retiring President should present an address on such subject as might be selected by him.

A communication from the Acting Secretary of the Parent Society in regard to the Biographical Directory of the four Founder Societies, was read. It was discussed briefly, but no action was taken.

New York Section Considers Metropolitan Water Supply and Sanitation

On January 12th, 1921, the New York Section considered the fourth topic in its program of discussion bearing on the engineering development of the Metropolitan District, namely "Water Supply and Sanitation, Including Sewage and Disposal of Solid Wastes such as Garbage, Ashes and Snow." The subject was introduced by Dr. George F. Soper, former President of the Metropolitan Sewerage Commission of New York City, and was discussed by Messrs. J. Waldo Smith, Chief Engineer, Board of Water Supply, New York City; Morris R. Sherrerd, Chief Engineer, Department of Streets and Public Improvements, Newark, N. J.; William W. Brush, Deputy Chief Engineer, Bureau of Water Supply, New York City; William H. Burr, Consulting Engineer; Allen Hazen, Consulting Engineer; George W. Fuller, Consulting Engineer; John T. Fetherston, former Commissioner of Street Cleaning, New York City; and Dr. Royal S. Copeland, Commissioner of Public Health of the City of New York. A contribution from George S. Whipple, Professor of Sanitary Engineering, Harvard University, was read.

Dr. Soper declared that the insurance of a sanitary environment is the paramount problem which faces New York and vicinity, and he described the two great

requirements of a metropolis as an adequate supply of good drinking water and a prompt and complete disposition of the wastes. He pointed out that the problem is much complicated by the multiplicity of political units embraced in the Metropolitan area. Dr. Soper invited attention to the fact that the disposal end of the problem had scarcely been touched, although the water supply phase had attained a high degree of perfection. He showed that the two elements of the wastes problem are removal and disposal, and that the former does not necessarily imply the latter. He divided wastes into two classes; those which may be carried away by the gravity flow of water in conduits, and those which must be removed in some other manner, and referred to the plans recommended by the Metropolitan Sewerage Commission some years ago. Dr. Soper described present methods of handling ashes, garbage, and other refuse, and outlined the problems yet to be solved.

Mr. Smith discussed the present status of the New York City water supply project and described briefly the several watersheds still available to supply the communities of the Metropolitan District. Mr. Sherrerd presented a corresponding discussion of the New Jersey section of the District, which includes the counties of Bergen, Passaic, Hudson, Essex and Union.

Mr. Brush presented details as to the yield of the sources that supply New York, and the consumption of that city. He explained the part played by the various sources in the general water supply function, and discussed the popular misconceptions concerning the so-called waste of water over the spillways of watersheds that have been already developed to their economical capacity. Mr. Brush also touched on the possibility of using such excess storage for power purposes. He pointed out that those responsible for water supply should remember that, in the case of the Catskill supply it took about twenty years to develop public sentiment, investigate sources, secure legislative action, organize the engineering force, complete surveys, plans, specifications and contracts and construct the works necessary to commence delivery of the first water.

Professor Burr pointed out that preventable water waste is not so great as is commonly supposed, and probably does not exceed 15%; he discussed, also, the possibility of using water from the Adirondacks, and of pumping from the Hudson River near Hyde Park. He touched on the problem that confronts the small communities that seek water in a water-shed that has been developed by a large neighboring city, and urged a respect for the rights of the smaller towns.

Mr. Hazen commended the administration of the New York Water Supply, and pointed out the possibilities for developing new supplies for West Chester towns. In discussion the sewerage problem he expressed the opinion that the sewage absorption capacity of New York Harbor waters has not yet been reached, and that the time for radical, far-reaching, expensive action has not arrived.

Mr. Fuller spoke of the business phases of the Metropolitan Water Supply problems and emphasized the long period of time that is always necessary to arrange financial, legislative and administrative programmes to carry on such works. As to the sewerage problem, Mr. Fuller took a position intermediate between Dr. Soper and Mr. Hazen, and pointed out that although there is great absorptive capacity in New York Harbor there are some localities in need of present attention. In connection with sewage and garbage disposal, he referred to British practice and men-

tioned the city of Montreal, Canada, where some success in garbage disposal from a financial standpoint has been attained.

Professor Whipple felt that the day is not distant when the rate of growth of New York City will begin to decline, and that the financial problem would then overtop all others. He urged that systematic analyses be made of harbor waters on a permanent basis in order to know at all times just what conditions exist, and that meanwhile the City should continue to take advantage of the natural receptive conditions afforded by the harbor. He granted a probability that some relief works should be undertaken even now. Professor Whipple agreed with Dr. Soper as to the difficulty of the problem offered by the solid wastes, and urged a serious experimental study of it. He referred also to the general problem of pure air in public places. In summing up, he declared that the financial element must control and that the ultimate problem is to make a dollar buy as much health and comfort and beauty as possible.

Mr. Fetherston presented some figures as to the solid wastes which must be disposed of and described methods used heretofore, including those for snow removal. He declared the real need to be for funds, for executive action, competent engineering design, execution, and expert municipal operation of a complete utilization-disposal system.

Dr. Copeland told of the work that was being done to solve the garbage disposal problem, and urged upon engineers the duty of advising and co-operating in the solution.

Regular Meeting of Seattle Section

A regular meeting of the Seattle Section was called to order at 12:45 P. M. on December 6th, 1920, at the Masonic Club; Vice-President Carl H. Reeves in the chair; Bertram D. Dean, Secretary; and present, also, 17 members.

A communication from the City Council inviting the Local Section to appoint a representative on the Committee for the Revision of the Seattle Building Ordinance was read. Upon motion, duly seconded and carried, the Chair was instructed to appoint as representative Mr. John L. Hall.

A letter from the Dallas, Texas, Section regarding the alleged invasion of National Parks by water power interests was read. It was moved by Mr. Allison, seconded by Mr. C. A. Merriam, and carried, that this protest be opposed.

Application for the formation of a Student Chapter of the Society at the University of Washington was presented by Mr. C. C. Moore, and it was moved by Mr. J. C. Ralston that the Local Section approve this application, and respectfully urge the Parent Society to grant the petition, which is endorsed by two Corporate Members, Mr. Moore and Mr. Richardson. This motion was seconded and carried unanimously.

It was moved, duly seconded, and carried, that the Chair appoint a programme committee for the Annual Meeting of the Section to be held on January 31st, 1921. The Chair appointed Messrs. Phipps, Howes, and Dean.

Mr. Reeves then called on Mr. Ralston, of Spokane, Wash., for a report on the Columbia River project. Mr. Ralston gave an exceptionally clear statement of the recent activities of opposing interests in their efforts to becloud the issue, and to further their own ends.

Meeting of Cleveland Section, January 12th, 1921

Favorable responses from the Congressmen to whom letters have been addressed in regard to the defeat of the Smith Bill (H. R. 12466) were read by Secretary George H. Tinker at the mid-day meeting of the Cleveland Section held at the Statler Hotel on January 12th, 1921, Vice-President A. V. Ruggles in the chair, and 22 members present.

A letter from the Secretaries of the four National Societies in reference to the publication of an official directory of members, or "Who's Who in Engineering" was read, and after an informal discussion, it was moved, seconded and carried that it was the sense of those present that such a publication would be of doubtful value.

115th Regular Meeting of the Colorado Section

At the 115th Regular Meeting of the Colorado Section held at the Shirley Hotel, Denver, Colo., on January 10th, 1921, 14 members and 1 guest present, a communication inviting the Section to meet with the Local Section of the American Society of Mechanical Engineers on January 25th, 1921, was read, and action was taken accepting the invitation.

Mr. Charles Williams, Chairman of the Committee appointed to investigate and make recommendations concerning the Smith Bill (H. R. 12466) and the Federal Water Power Act, reported on the principal parts of the bill and presented a thorough discussion of its various provisions, concluding with resolutions submitted as embodying the recommendations of the Committee that the Smith Bill and Federal Water Power Act should be supported by the Section, and that all publicity practicable be given to this position of the Section. The subject was discussed by Messrs. Freeman and Weymouth, and it was moved, seconded and unanimously carried that the report of the Committee be accepted.

Secretary John S. Means reported briefly on his trip to New York City to attend a meeting of the Committee on External Relations of the Parent Society, and outlined the work done during the sessions of the Committee.

H. L. Thackwell, Assoc. M. Am. Soc. C. E., as the speaker of the evening, related his experience while engaged on a survey for the pipe line of the Anaconda Copper Company in Chile. Mr. Thackwell, by omitting dry technical detail, held the attention of the audience by an interesting account of his many personal observations and experiences touching on the living conditions of the natives, their occupations, habits and form of government, the climatic conditions and similar topics, both in Chile and Peru. The speaker showed his keen appreciation of the human side of engineering by frequent references to the traits of the laborers, and the best mode of handling them. Many pictures of the territory in which his work had been carried on were shown, after which a brief explanation of certain features of the design of the pipe line concluded the address.

Annual Meeting of the Portland, Ore., Section

The Annual Meeting of the Portland, Ore., Section was held at the University Club on January 14th, 1921; President J. C. Stevens in the chair; C. P. Keyser, Secretary; and present, also, 32 members and 1 guest.

The President announced that he had appointed Messrs. O. E. Stanley, D. W. Cole, Irving Worthington, Ben S. Morrow and H. A. Rands as delegates to the Oregon Irrigation Congress held in Portland, Ore., on January 7th and 8th, 1921.

A communication from the Secretaries of the Founder Societies requesting action by the Section in regard to the publication of "Who's Who in Engineering", was read; on motion, duly seconded and unanimously carried, the Portland Section went on record in opposition to the compiling of such a list.

The Secretary read a brief report in regard to the meetings of the Section, and the attendance during the past year. The retiring President reviewed the work of the Section during his tenure of office, and mentioned especially the formation of the Oregon Technical Council and the work accomplished by that organization.

The meeting then proceeded to the election of new officers, and the following were declared elected:

M. E. Reed, President; S. Murray, 1st Vice-President, to fill the vacancy created by the election of Mr. Reed; Ben S. Morrow, 2d Vice-President.

In accordance with a motion, duly seconded and carried, the Chair appointed Messrs. C. N. Bennett, U. S. Turner, and R. E. Koon as a Committee to investigate the treatment accorded O. E. Stanley, M. Am. Soc. C. E., as a result of the situation in regard to defective sewer construction, and report to the Section; any necessary expense incurred by the Committee is to be paid by the Section.

On motion, duly seconded and carried, the delegate of the Section to the Oregon Technical Council was instructed to bring the McCormick Bill before that body for action.

ENGINEERING SOCIETIES SERVICE BUREAU

Engineering Societies Service Bureau, established December 1st, 1918, as an activity of Engineering Council, is managed by a board made up of the Secretaries of the four Founder Societies, funds for its maintenance being provided by these Societies. The Bureau is co-operating with engineering organizations in all parts of the country. It is desirous of increasing such co-operation by working with local engineering associations and clubs. Members of the American Society of Civil Engineers who desire to register with this Bureau should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Service Bureau, First Floor, Engineering Societies Building, 29 West 39th Street, New York City. In order to be included in the list published in *Proceedings*, copy must be received on or before the first Wednesday of each month.

All communications should be addressed to Mr. Brown. Notices are not acknowledged by personal letter, and unless the applicant is otherwise advised his notice will be published in the earliest possible issue. Correspondence relating to replies to advertisements returned to the Bureau will be held for one month only.

EMPLOYMENT BULLETIN

POSITIONS AVAILABLE.

ENGINEER with considerable experience in industrial plant layout and design. Must have executive ability. Write fully, giving age, experience and salary expected. Location, Middle West. X-127.

CHIEF DRAFTSMAN for industrial plant design and layout, including locating and providing for all equipment. Give past experience, age and salary expected. Location, Middle West. X-139.

INSTRUCTORS: All engineers willing to consider teaching positions are invited to register with the Service Bureau, which has been called on to fill more positions, varying in grade from Laboratory Assistant to Heads of Departments in various engineering and technical schools of this country, than it has been able to fill from among the men now registered. Blanks for registration and information regarding the Bureau may be had by addressing Mr. Brown.

U. S. CIVIL SERVICE EXAMINATIONS

APPLY TO U. S. CIVIL SERVICE COMMISSION, WASHINGTON, D. C.

JUNIOR ENGINEER AND DECK OFFICER, U. S. Coast and Geodetic Survey, examination April 13th and 14th, 1921; entrance salary \$2 000 per year, increased to \$2 240 after one month if service is satisfactory. About 50 vacancies to be filled from eligibles resulting from this examination, after a probationary period of six months or more, including commissioned officers ranging from Ensign in the Navy, at about \$2 500, to Captain at about \$7 000 per year. Subjects and weights: (1) mathematics, including trigonometry, analytics, mechanics, and calculus, 15; (2) practical computations, 20; (3) modern language, 10; (4) astronomy, especially determination of latitude, longitude, time, and azimuth, and use of field instruments, 20; (5) physics—optics, magnetism, etc.—15; (6) surveying, plane and geodetic, 20. Time allowed, two days of six hours each: (1), (2), and (3) on the first day and (4), (5), and (6) on the second. Slide rule allowed and logarithmic tables furnished. Prerequisite: Graduation from college, university, or technical school of recognized standing with degree of B. S. in Civil Engineering, or C. E. Physical examination required, also photograph on day of examination.

ENGINEER, ASSISTANT ENGINEER, AND JUNIOR ENGINEER. Applications will be rated as received until July 1st, 1921, to fill vacancies in the Water Resources Branch of the Geological Survey, at salaries of \$2 400 or over for Engineers, \$1 800 to \$2 340 for Assistant Engineers, and \$1 440 to \$1 740 for Junior Engineers; in addition, employees will be allowed expenses when on field duty, and appointees whose services are satisfactory may be allowed the bonus of \$20 a month granted by Congress. Duties: Gauging streams, study and investigations of water supply, water utilization, and power, field investigations, writing and review of resulting reports. Candidates not required to report for examination at any place, but will be rated on the following subjects, which will have the relative weights indicated (ratings based on sworn statements in applications, and corroborative evidence): For Engineer and Assistant Engineer—general and technical education and training, 50, professional experience, 50; for Junior Engineer—surveying, 10, mathematics, 20, general hydraulics, 30, water-power engineering, 10, river hydraulics, 15, other training and experience, 15. Prerequisite: Graduation from an engineering

course of college or university of recognized standing; for Junior Engineer, senior students may later submit proof of actual

graduation within three months from date of making oath to application.

MEN AVAILABLE.

CIVIL ENGINEER AND CONSTRUCTION MANAGER, at present completing construction of large industrial plant, having made a record in low cost and speed on reinforced concrete structures. Available about March 1st. Twenty-five years' experience in construction of industrial plants, buildings, railroads, sewers, and water works. CE-79.

GRADUATE CIVIL ENGINEER, Assoc. M. Am. Soc. C. E., age 36, married. Fifteen years' experience design of bridges and buildings, steel and reinforced concrete piers, foundations, retaining walls, bins, etc. Recently Resident Engineer on large alteration job in New England. Highly recommended. New York City preferred. CE-80.

GENERAL MANAGER OR PLANT SUPERINTENDENT, age 40; graduate Civil Engineer; M. Am. Soc. C. E. Eighteen years' experience on field work, design, construction and operation of industrial plants and plant management. Has been unusually successful in organizing and operating manufacturing plants, and in getting results therefrom. At present in charge of large new plant in New York territory. Desires to make change to a connection in the Philadelphia district, with responsible company or individual, that will promise permanency and a future proportionate to results obtained. CE-81.

CIVIL ENGINEER, nine years' experience, B. S. in C. E. Railroad, industrial and municipal work; design, detailing and supervision of construction of reinforced concrete, steel, timber, and brick factories and warehouses; plant layout; all kinds of surveying, including accurate and underground. Jun. Am. Soc. C. E. CE-82.

ENGINEER AND CONSTRUCTOR, M. Am. Soc. C. E., age 44. Twenty-four years' experience as engineer, superintendent and executive in the United States, Alaska, Canal Zone and Peru, principally in charge of city improvements, river and harbor improvements, dredging, hydro-electric construction, irrigation, shipbuilding, dams, buildings, etc. Speaks Spanish. CE-83.

ENGINEER AND SUPERINTENDENT, age 37; graduate C. E.; Assoc. M. Am. Soc. C. E.; married. Seventeen years' field and office work, including seven years in foreign service, municipal water supply, sewers, streets, railroad location and construction, port work, design and construction of dams, and design and operation of floating plant, desires connection with engineer or contracting company. CE-84.

CIVIL ENGINEER, age 33; married. Ten years' experience in structural and mechanical lines, including design and detail of coal handling and conveying plants and equipment, structural steel and sheet metal work for mill buildings, towers, trestles, breechings, etc. Also has had considerable experience in developing of warped surface and skewed connections, as well as checking, estimating, inspecting and field superintendence of work. Assoc. M. Am. Soc. C. E.

New York City and vicinity preferred. CE-85.

CONSTRUCTION ENGINEER, Seventeen years in charge of construction, railways, tunnels, docks and piers, steel tanks and pipe lines, reinforced concrete construction, industrial plant erection, investigations, estimates and reports. Some knowledge of Spanish. Interview solicited. CE-86.

EXECUTIVE ENGINEER, age 38, possessing tact, business judgment, initiative. Fifteen years' experience in engineering and contracting on tunnels, railroads, subways, reinforced concrete structures, public utilities, piers, docks, buildings, highways and foundations. Initial salary subordinate to right kind of responsible connection. Now available. Go anywhere, but New York City location desired. CE-87.

ENGINEER, age 33; with executive ability. Married; Assoc. M. Am. Soc. C. E. Thirteen years' experience in design, dredging surveys and superintendency, the latter for Turner Construction Company. Desires position, reinforced concrete work preferred. CE-88.

CIVIL ENGINEER, age 28; Assoc. M. Am. Soc. C. E.; Member American Concrete Institute. Capable executive. Experience includes surveys; architectural, reinforced concrete and structural design of buildings; design and construction of sewers, sewage disposal works and highway bridges; city planning; highway construction and maintenance; research, tests and reports. Recently Capt. Engrs., U. S. A. Was Asst. Plant Manager and Asst. Chief Engineer of rolling mill. Seven years' active practice; three years in responsible charge. Desires connection with engineering, contracting or manufacturing company, preferably in the vicinity of Philadelphia. CE-89.

MEMBER AM. SOC. C. E. AND AM. INST. M. E. desires executive position. Age 33; married. Graduate Civil Engineer, 1910. Experience as general engineer, administrative, commercial, foreign developments and negotiations. Has traveled throughout world, principally in Far East and South America. Would consider investing in business. Open for all or part time. Eastern interview. Salary and references in conference. CE-90.

ASSOCIATE MEMBER AM. SOC. C. E., age 37; married, holding B. S. and C. E. degrees. Thoroughly experienced in railroad location, construction, and maintenance and in all phases of structural designing, a specialist in layouts and designs of industrial buildings. Now employed; desires satisfactory engagement with New York firm. CE-91.

MEMBER AM. SOC. C. E. sixteen years; Member American Railway Engineering Association fourteen years. Broad technical experience and latterly, financial and technical experience; over two years in France in Engr. Corps, U. S. A., holding highly responsible technical-appraisal position involving disbursements of millions of francs:

especially valuable to a corporation in a position requiring a combination of financial and technical ability. Highest references. CE-92.

GRADUATE CIVIL ENGINEER, age 34; single.

Assoc. M. Am. Soc. C. E. Nine years' experience in field engineering covering railways, highways, dock and building construction. Six years with Panama Canal. Two years 1st Lt., Corps of Engineers, U. S. A. Six months' surveys in South America. Excellent references. Speaks Spanish, and available at once to go anywhere. CE-93.

CIVIL ENGINEER, technical graduate, age 39.

Assoc. M. Am. Soc. C. E. Fourteen years' experience, four in the tropics. Capable of designing and erecting reinforced concrete or structural steel structures, dams, sewer and water systems. Prefer work connected with hydro-electric development. Available at once to go anywhere. CE-94.

CONTRACTOR'S ENGINEER; graduate. Two

years' experience as superintendent concrete construction; three years on design of concrete and steel structures; three years as chief estimator and solicitor, building contractor; two years estimator and sub-contractor man for large building contractor. Experience on all types of buildings and construction. Assoc. M. Am. Soc. C. E. CE-95.

CONSTRUCTION AND STRUCTURAL ENGINEER, age 43; married. M. Am. Soc. C. E.

Twenty-five years' experience; six years on design, balance on construction of subways, sewers, structural steel and reinforced concrete structures, and appraisal work. Has had responsible charge of large construction. Good organizer and executive. Prefer Eastern states. CE-96.

CONSTRUCTION ENGINEER. Sixteen years'

experience in all classes of construction work, including executive positions in the field and office. Three years Capt., Constr. Div., U. S. Army. CE-97.

ENGINEER AND CONSTRUCTOR. Eleven

years' experience as construction engineer and superintendent on hydraulic, municipal and highway construction. Michigan graduate. Capable executive. Recently Assistant Division Engineer on large flood protection project. Open for immediate engagement with engineering or contracting company offering responsibility. Mid-western interview. CE-98.

CONSTRUCTION ENGINEER, graduate C. E.;

married. Assoc. M. Am. Soc. C. E. Twelve years' experience power house construction, foundations, sub-aqueous work, retaining walls, layouts and design. Installation of mechanical apparatus. Available at once. Desires position in responsible charge of work. CE-99.

EXAMINATIONS FOR ENGINEERS' LICENSES

For the convenience of the membership, abstracts of the examination requirements of all States in which engineers are now required to obtain licenses before being allowed to practice, together with the addresses of the officers to whom application must be made, are repeated from the complete abstracts of the various laws now in force, as published in the October, 1920, *Proceedings*, as follows:

Colorado.—Each candidate is examined in that branch of engineering in which he is proficient, as set forth in his application. The Board conducts the examination in such manner as it deems best suited to determine the fitness of candidates, and it may summon any licensed engineer to assist in preparing for and in conducting examinations. Fee for examination is \$10.00, for license certificate \$5.00, and for renewal certificate, \$5.00 annually. Application for examination is made to State Engineer, Secretary, State Board of Engineer Examiners, Denver, Colo.

Florida.—The Board has ruled that examinations may consist of the applicant's sworn statement of professional education and experience in responsible charge of engineering work. If this statement is not complete or qualifying, the Board may summon the applicant to appear for further examination, and investigate his record of professional service. Examinations may be either oral; or partly oral and partly written. Fee for examination is \$15.00, for certificate of registration \$10.00 additional, for registration without examination \$25.00, and for renewal of certificate, \$5.00 annually. Application for examination is made to the Secretary, State Board of Engineering Examiners, 215 East Bay Street, Jacksonville, Fla.

Idaho.—Examinations are held semi-annually in the State Capitol, Boise, Idaho, beginning at 9 A. M., the second Tuesday of March and September. Application must be received 10 days before the date of examination. Fee for residents is \$10.00, for non-residents \$25.00, for renewal, \$2.00 annually. Application for a Certificate of Registration is made to the Department of Law Enforcement, Boise, Idaho, in writing under oath in such form and accompanied by such proof of the applicant's fitness to practice as the Department may from time to time prescribe. Must be accompanied by an unmounted photograph taken within a year.

Illinois.—Structural engineer's examinations include written and oral tests, and embrace subjects normally taught in schools of structural engineering. They occupy three days and cover theoretical and applied mechanics, definitions, general engineering knowledge, stress analysis, static and moving loads, design and construction in reinforced concrete, steel, wood, masonry, and foundations. Fee for examination \$10.00, for certificate of registration \$5.00, for examination to determine preliminary education \$5.00, for restoration of an expired certificate \$5.00, for renewal of certificate \$1.00 annually, for certificate to those who hold a like certificate from another State or country, \$15.00. Application for certificate is made upon prescribed blanks to the Department of Registration and Education, Springfield, Ill.

Iowa.—Examinations are required as prescribed by the Board. Fee for examination \$15.00, for certificate of registration \$10.00 additional, for certificate

without examination to person registered in another State, \$10.00. Application for examination is made to the State Board of Engineering Examiners, Box 923, Des Moines, Iowa.

Louisiana.—Examinations are required of all who are not graduates of an engineering college or school of good standing. Examination for surveying covers geometry, plane trigonometry, plane surveying and practical use of instruments; for engineering, covers in addition, physics, including practical problems in design and construction. Fee for examination \$25.00, for registration by diploma \$25.00, for registration of holder of license from another State \$15.00, for issuing license certificate \$1.00, engineering renewal license \$3.00 annually, surveying renewal license \$1.00 annually. Application for license or examination is made to the State Board of Engineering Examiners, Maison Blanche Building Annex, New Orleans, La.

Michigan.—Examinations are required of all who desire to begin the practice of architecture, engineering or surveying as principal or in responsible charge, except those from other States, and include English language and other appropriate subjects. Fee for examination \$5.00, for certificate of registration \$15.00 additional, for certificate of registration without examination \$20.00, for renewal of certificate \$5.00 every five years. Application for examination is made to the State Board of Examiners for the Registration of Architects, Engineers, and Surveyors, 80 Griswold St., Detroit, Mich.

New York.—Present practitioners must obtain licenses before May 14th, 1922. If evidence presented in the application does not appear to the Board to be conclusive or warranting issuance of a certificate, applicant may present further evidence, which may include the result of a required examination. Fee for certificate to practice engineering or land surveying \$25.00, for certificate to practice both engineering and land surveying \$35.00; no provision for renewals. Application for certificate must be made on a prescribed form to Regents of the University of the State of New York, Albany, N. Y.

Oregon.—Examinations may be either oral or partly oral and partly written. Fee for examinations \$10.00, for certificate of registration \$5.00 additional, for certificate of registration without examination \$15.00. Application for examination is made to the Secretary, State Board of Engineering Examiners, Corbett Building, Portland, Ore.

Virginia.—Examinations are required of all applicants except those from other States, as prescribed. They are held at least once each year at Richmond, Va., and at such other places and times as the Board may designate. Fee for each examination \$20.00. Application for examination is made to the State Board of Examination and Certification of Architects, Professional Engineers, and Land Surveyors, Richmond, Va. Registration is optional; present practitioners are not limited as to time within which to register.

Wyoming.—Examinations are required of all applicants except those licensed under previous Acts, and consist of a written examination and an investigation by the Board of record, training, and experience. Fee for examination \$10.00, for certificate of license without examination \$5.00. Application for examination is made to the State Board of Examining Engineers, Cheyenne, Wyo.

ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M. to 10 P. M., every day, except Sundays, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 6 P. M.

FUTURE MEETINGS

March 2d, 1921.—8.00 P. M.—A regular business meeting will be held, the programme for which will be announced later.

SECOND MEETINGS OF THE MONTH

Under authority given by the Board of Direction at its meeting of August 9th, 1920, the Acting Secretary has made an arrangement with the New York Section whereby the latter will take over the second meeting of the month, and will thus hold its own meetings on the third Wednesday of each month, except January and May, when they are held on the second Wednesday.

The programmes announced by the New York Section* are similar to those heretofore offered by the Society's Committee on Second Meeting of the Month, and it is understood that all members of the Society are invited to attend the meetings regardless of whether or not they may be members of the Section. This arrangement gives each member the same privilege of attendance at meetings which he has heretofore enjoyed, and is deemed especially desirable since there has been considerable doubt as to the attendance that might develop at the several meetings if three were held in each month.

ANNUAL CONVENTION

The Fifty-first Annual Convention of the Society will be held at Houston, Tex., from April 27th to 29th, 1921, inclusive.

The general arrangements for the Convention are in the hands of the following Committees:

Committee of the Board of Direction

GEORGE G. ANDERSON, *Chairman*,

EDWARD E. WALL,

FRANK T. DARROW.

Local Committee.

J. H. BRILLHART, *Chairman*,

E. B. CUSHING,

J. M. HOWE,

HENRY F. JONAS,

E. G. MACLAY,

J. C. McVEA,

E. E. SANDS,

M. J. SULLIVAN.

A circular giving information as to the general programme, transportation, hotel rates, etc., will be issued later.

* *Proceedings, Am. Soc. C. E., November, 1920, p. 868.*

REGULATIONS FOR STUDENT CHAPTERS

1.—A Student Chapter in affiliation with the American Society of Civil Engineers, composed of students of schools of engineering of recognized reputation, may be organized upon favorable vote by the Board of Direction. The name of such an affiliated society shall be "The.....* Student Chapter of the American Society of Civil Engineers."

2.—The qualifications required of a proposed Student Chapter shall include:

- (a).—An organization of students in an engineering school of high standing;
- (b).—The endorsement of the application by the head of the civil engineering department;
- (c).—A minimum membership of twenty students.

3.—Each Student Chapter shall establish its own rules of government and procedure, which shall conform with any regulations which may be formulated by the American Society of Civil Engineers. It is also intended that each Student Chapter shall control the occurrence and character of its own meetings; but the American Society of Civil Engineers desires especially to aid in promoting the success and value of student chapters by frequent consultations and advice, as well as by arranging for speakers, on request, whose addresses will broadly supplement the class-work of the members. Each Student Chapter is authorized to communicate direct with the Local Section or local members in whose territory it is situated, to arrange for speakers and for other co-operation.

4.—Each Student Chapter shall submit an annual report, not later than the last day of December of each year, which shall include

- (a).—A summary statement of the meetings held during the calendar year; giving the date of each, the attendance, the principal speaker and his subject, and other pertinent information;
- (b).—Names of the officers, and of the members by classes, at the date of the report.

5.—Any address or paper read before a Student Chapter may be offered for publication to the American Society of Civil Engineers under the general provisions established for this procedure, and shall be submitted to the Board of Direction when requested by the said Board or when such Chapter desires to publish it in a local journal or elsewhere; it being understood that the privilege of priority in publications exists in the American Society of Civil Engineers, though the Society claims no exclusive copyright upon such papers.

6.—The annual dues of each Student Chapter shall be \$10.00 per year, which, under provisions approved by the Board of Direction, shall entitle it to the following:

- (a).—A copy of each issue of the *Proceedings* of the American Society of Civil Engineers and of all papers;
- (b).—The opportunity to publish notices of its chapter activities, etc., in publications of the American Society of Civil Engineers;

* Insert the name of the educational institution at which the particular student chapter is situated; for example, "Stanford University".

- (c).—The active co-operation of the American Society of Civil Engineers in advancing the interests of each Student Chapter by contributing (from its organization, membership, and experience) such service as may be mutually arranged.

The annual dues shall apply to the current fiscal year and shall be payable in advance, due January 1st. The Secretary of the American Society of Civil Engineers shall send out bills for dues each December for the following year. Student Chapters admitted on or after July 1st of each year shall pay \$5.00 only for the balance of the current fiscal year.

7.—Among the privileges offered to the members of Student Chapters are:

- (a).—Individual subscription to the *Proceedings* of the American Society of Civil Engineers at a special price of \$3.00 per year;
- (b).—To receive at cost, on request, copies of such separate papers as may be printed in pamphlet form;
- (c).—To use on all official stationery the special official emblem, prescribed in Section 8;
- (d).—A membership card, of special design, prescribed in Section 9, to be issued annually;
- (e).—The right to attend the meetings and accompany inspection trips and excursions arranged for members of the American Society of Civil Engineers;
- (f).—Provision for the publication of requests for summer employment during the college course, or for permanent engagement after graduation, on such terms as the Board of Direction may prescribe; and
- (g).—The opportunity to hear, on special occasions, speakers whose personal experiences qualify them to speak with authority upon the many questions which are of particular importance to the student during his college course.

8.—The official emblem for stationery for Student Chapters shall be in strict accord with a standard design, as prescribed by the Board of Direction.

9.—The membership cards shall be supplied and signed by the Secretary of the American Society of Civil Engineers, in accordance with official annual lists furnished by the Secretaries of the Student Chapters.

10.—Applications for admission of Student Chapters to the American Society of Civil Engineers shall be in the following form:

.....
(Place.)

.....
(Date.)

"TO THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN: The.....hereby make application for affiliation with the American Society of Civil Engineers as a Student Chapter, under the terms prescribed by the Board of Direction.

"In regard to the qualifications required of a proposed Student Chapter, we submit the following.

"(a).—This.....is composed of.....
(Seniors, Juniors, Sophomores, Freshmen.)

..... It was organized.....
(Date.)

"(b).—Our application for affiliation is herewith endorsed by.....
....., Head of the Department of Civil Engineering.

"(c).—There are at present.....active members of this organization.
(Number.)

Respectfully yours,

.....
Secretary.

"Endorsed:

.....
"Head of Civil Engineering Department,

.....
"Name of Educational Institution."

11.—A Student Chapter may be disbanded upon the approval of the Board of Direction provided its annual dues for the current calendar year have been paid. The Board of Direction may discontinue a Student Chapter if its annual dues are not paid promptly, or if it becomes inactive, or if its continuance is considered not for the best interest of the Society.

RULES ADOPTED BY THE BOARD OF DIRECTION FOR THE USE OF THE ADDRESSOGRAPH AND MAILING LIST OF THE SOCIETY

The following rules were adopted by the Board of Direction at its meeting of November 9th, 1920, for the use of the Addressograph and Mailing List of the Society:

1.—The Addressograph shall be used by the Secretary only in the routine of the issuance of Society matter and for the issuance of notices of joint meetings of this and other societies.

2.—The Mailing List shall be furnished by the Secretary:

(a) To Local Sections of the Society free of charge for legitimate use by them in relation to Society matters, and

(b) To individual members of the Society at cost price for their communication with the membership regarding Society affairs.

3.—Neither Mailing List nor the use of the Addressograph shall be furnished to any one for commercial or advertising purposes.

4.—In the difficulty of prescribing rules to cover each case that may arise in the future, the Secretary is authorized to use his discretion regarding each application as to whether it is in accordance with the spirit of the rules here outlined.

5.—These rules shall be published in the *Proceedings* of the Society so that all members may have an equal chance to avail themselves of the advantages of the use of the Mailing List.

SEARCHES IN THE LIBRARY

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York City, who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on page 21 of the Year Book for 1920.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper. Written discussion on a given paper will be closed three months after the paper has been published, so that the author's closure can be printed four months after the paper, and the discussions and closure distributed in pamphlet form.

All manuscript submitted for publication should preferably be typewritten, and always double spaced. Drawings and diagrams should be on separate sheets, drawn to a scale suitable for about one-half to one-fourth reduction.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 35 of the Year Book for 1920.

LOCAL SECTIONS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Section, Organized 1905.

M. M. O'Shaughnessy, President; Nathan A. Bowers, Secretary-Treasurer, 531 Rialto Building, San Francisco, Cal.

Bi-monthly meetings are held at 6 P. M., at the Engineers' Club, 57 Post Street, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting. Informal luncheons are held at noon, every Wednesday, at the Engineers' Club. All members of the Society will be gladly welcomed.

Colorado Section, Organized 1908.

Oliver T. Reedy, President; John S. Means, Secretary-Treasurer, 1574 Marion Street, Denver, Colo.

Meetings are held on the second Monday of each month, except July and August, usually preceded by an informal dinner. Weekly luncheons are held on Wednesday, at 12.30 p. m., at Daniels and Fisher's. Visiting members of the Society are urged to attend.

Atlanta Section, Organized 1912.

J. T. Wardlaw, President; R. S. Fiske, Secretary-Treasurer, 1530 Healey Building, Atlanta, Ga.

Informal luncheons are held on the last Monday of each month, at 12.30 p. m., to which visiting members of the Society are welcome.

Baltimore Section, Organized 1914.

Ezra B. Whitman, President; George S. Robertson, Sr., Secretary-Treasurer, 1628 Linden Avenue, Baltimore, Md.

Buffalo Section, Organized 1921.

A. L. Johnson, President; Bruce L. Cushing, Secretary-Treasurer, 80 West Genesee Street, Buffalo, N. Y.

Central Ohio Section, Organized 1921.

F. H. Eno, President; H. D. Bruning, Secretary, 935 Madison Avenue, Columbus, Ohio.

Cincinnati Section, Organized 1920.

Edgar Dow Gilman, President; Alphonse M. Westenhoff, Secretary, 9 East Third Street, Cincinnati, Ohio.

Cleveland Section, Organized 1914.

J. E. A. Moore, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

Regular meetings are held on the second Wednesday of each month, at 12.15 p. m., in the Rooms of the Cleveland Engineering Society, Hotel Statler. Luncheon is served, and all visiting members of the Society are invited to attend.

Connecticut Section, Organized 1919.

Charles Rufus Harte, President; Clarence M. Blair, Secretary-Treasurer, 785 Edgewood Avenue, New Haven, Conn.

The Annual Meeting is held in April; fortnightly meetings alternate between Hartford and New Haven, Conn. These meetings are informal luncheon gatherings, held usually at noon on Saturday. Members are privileged to invite guests regardless of their affiliation as engineers.

Detroit Section, Organized 1916.

David A. Molitor, President; Dalton R. Wells, Secretary-Treasurer, 624 McKerchey Building, Detroit, Mich.

Regular meetings are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Section, Organized 1916.

John C. Hoyt, President; James H. Van Wagenen, Secretary-Treasurer, 719 Fifteenth Street, N. W., Washington, D. C.

Duluth Section, Organized 1917.

W. A. Clark, President; Walter G. Zimmermann, Secretary, 203 Wolvin Building, Duluth, Minn.

Regular meetings are held at noon on the third Monday of each month, usually at the Kitchi Gammi Club, to which visiting members of the Society will be welcomed. The Annual Meeting is held on the third Monday in May.

Illinois Section, Organized 1916.

A. F. Reichmann, President; W. D. Gerber, Secretary-Treasurer, 913 Chamber of Commerce, Chicago, Ill.

Regular meetings are held on the second Monday of March, June, September, and December, the last being the Annual Meeting.

Iowa Section, Organized 1920.

C. S. Nichols, President; R. W. Crum, Secretary, Care, Iowa State Highway Commission, Ames, Iowa.

Louisiana Section, Organized 1914.

A. T. Dusenbury, President; Eugene F. Deléry, Secretary, 602 Sewerage and Water Board Building, New Orleans, La.

Regular meetings are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Nebraska Section, Organized 1917.

Rodman M. Brown, President; Homer V. Knouse, Secretary-Treasurer, 200 City Hall, Omaha, Nebr.

Regular meetings are held on the first Saturday of each month, except July and August. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January. Visiting members of the Society are especially urged to communicate with the Secretary when in the city.

New York Section, Organized 1920.

William J. Wilgus, President; W. T. Chevalier, Secretary, 17 Battery Place, New York City.

Regular meetings are held in the Engineering Societies Building, 29 West 39th Street, New York City, on the third Wednesday of each month, except January and the Annual Meeting in May, held on the second Wednesday of the month.

Northwestern Section, Organized 1914.

Charles L. Pillsbury, President; Paul C. Gauger, Secretary, 945 Osceola Ave., St. Paul, Minn.

Meetings are held bi-monthly, alternating between St. Paul and Minneapolis, on the third Friday of each month.

Philadelphia Section, Organized 1913.

John Meigs, President; Henry T. Shelley, Secretary, 416 City Hall, Philadelphia, Pa.

Regular meetings are held at the Engineers' Club on the first Monday in January, April, and October, the last being the Annual Meeting. Special meetings are also held, at times announced in advance.

Pittsburgh Section, Organized 1917.

N. S. Sprague, President; Nathan Schein, Secretary-Treasurer, 426 City-County Building, Pittsburgh, Pa.

Portland (Ore.) Section, Organized 1913.

M. E. Reed, President; C. P. Keyser, Secretary, 318 City Hall, Portland, Ore.

Meetings are held on the third Friday of each month; the Annual Meeting is held on the second Friday in January. Members of the Society are cordially invited to attend.

Providence (R. I.) Section, Organized 1920.

Sydney Wilmot, Chairman; Howard W. Congdon, Secretary-Treasurer, Care Providence Steel and Iron Company, Providence, R. I.

St. Louis Section, Organized 1888 (Constitution Approved by Board, 1914).

William S. Mitchell, President; W. R. Crecelius, Secretary-Treasurer, 301 City Hall, St. Louis, Mo.

The Annual Meeting is held on the fourth Monday in November. Two meetings each year for the presentation and discussion of technical papers are held in the Auditorium of the Engineers' Club, and are open to members of the Associated Societies. Other "get-together" meetings are held regularly for dinner or luncheon on the fourth Monday of each month except July, August, and November.

San Diego Section, Organized 1915.

George Cromwell, President; R. C. Wueste, Secretary-Treasurer, Bonita, Cal.

The San Diego Section of the American Society of Civil Engineers meets on announcement. Pilgrimages to points of engineering interest are made at intervals throughout the year.

Seattle Section, Organized 1913.

T. E. Phipps, President; Frank H. Fowler, Secretary-Treasurer, 1711 Ravenna Boulevard, Seattle, Wash.

Regular meetings, with luncheon, are held at the Engineers' Club, on the last Monday of each month. Informal luncheons are also held at 12.15 P. M., every Monday at the Engineers' Club. All members in any grade of the Society are cordially invited to attend, and if located in this District for any length of time, their membership in the Section will be appreciated.

Southern California Section, Organized 1914.

H. W. Dennis, President; Floyd G. Dessery, Secretary, 619 Central Building, Los Angeles, Cal.

Regular monthly meetings are held on the second Wednesday of each month, the Annual Meeting in December. Informal luncheons in connection with the Joint Technical Societies of Los Angeles are held at 12.15 P. M., every Thursday at the Broadway Department Store Café.

Spokane Section, Organized 1914.

E. G. Taber, President; Charles E. Davis, Secretary-Treasurer, 401 City Hall, Spokane, Wash.

Regular meetings are held on the second Friday of each month, except July and August.

Texas Section, Organized 1913.

J. H. Brillhart, President; E. N. Noyes, Secretary, 311 Deere Building, Dallas, Tex.

Utah Section, Organized 1916.

A. B. Villadsen, President, 304 Dooly Bldg., Salt Lake City, Utah.

The Annual Meeting is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the President.

**STUDENT CHAPTERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS****Braune Civil Engineering Society (University of Cincinnati) Student Chapter,
Organized 1920.**

Clinton H. Wood, President; H. J. Miller, Secretary of Section I; Alvord C. Stutson, Secretary of Section II; University of Cincinnati, Cincinnati, Ohio.

Civil Engineering Society of Rensselaer Polytechnic Institute Student Chapter, Organized 1920.

E. C. Larson, President; T. W. Broughton, Secretary, Rensselaer Polytechnic Institute, Troy, N. Y.

Drexel Institute Student Chapter, Organized 1920.

Miles N. Clair, Acting Chairman; C. V. Nishwitz, Secretary, Drexel Institute, Philadelphia, Pa.

Iowa State College Student Chapter, Organized 1920.

Alfred W. Warren, Secretary, Iowa State College, Ames, Iowa.

Pennsylvania State College Student Chapter, Organized 1920.

Arthur H. McFadden, President; William W. Seltzer, Secretary, Pennsylvania State College, State College, Pa.

Rutgers College Student Chapter, Organized 1921.

Arthur E. Hilliard, Secretary, Rutgers College, New Brunswick, N. J.

Stanford University Student Chapter, Organized 1920.

R. L. Wing, President; F. L. Adams, Corresponding Secretary, Stanford University, Cal.

State University of Iowa Student Chapter, Organized 1921.

C. E. Stickney, Secretary, State University of Iowa, Iowa City, Iowa.

University of Colorado Civil Engineering Student Chapter, Organized 1920.

W. C. Peterson, President; E. S. Huntington, Secretary, University of Colorado, Boulder, Colo.

University of Kentucky Student Chapter, Organized 1921.

B. O. Bartee, Secretary, University of Kentucky, Lexington, Ky.

University of Pennsylvania Student Chapter, Organized 1920.

Ashby B. Paul, President; Robert Beatty, Secretary, University of Pennsylvania, Philadelphia, Pa.

University of Pittsburgh Student Chapter, Organized 1921.

W. E. Marshall, President; Paul H. Young, Secretary, University of Pittsburgh, Pittsburgh, Pa.

University of Texas Student Chapter, Organized 1921.

Ralph S. Windrow, President; Luis Tinoco, Secretary, University of Texas, Austin, Tex.

University of Wisconsin Civil Engineering Society Student Chapter, Organized 1921.

I. I. Rotter, President; Harold E. Crider, Secretary, University of Wisconsin, Madison, Wis.

Washington University Collimation Club Student Chapter, Organized 1920.

Harold T. Smeltz, President; Raymond Schuermann, Secretary, Washington University, St. Louis, Mo.

**PRIVILEGES OF ENGINEERING SOCIETIES
EXTENDED TO MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcome in the Reading Rooms and at the meetings of many engineering societies in all parts of the world. A list of such societies will be found on pages 42 and 43 of the Year Book of the Society for 1920.

The Engineering Societies of Wisconsin, Madison, Wis., Vereeniging van Waterstaatsingenieurs in Nederlandsch Oost-Indie, and American Society of Safety Engineers, of New York City, are to be added to the above mentioned list, and members of these Societies are accorded the usual courtesies and privileges of the Headquarters of the Society.

ANNUAL REPORT OF THE BOARD OF DIRECTION FOR THE YEAR ENDING DECEMBER 31st, 1920.

In compliance with the Constitution, the Board of Direction presents its report for the year ending December 31st, 1920.

MEMBERSHIP

The changes in membership are shown in the following table:

	JAN. 1ST, 1920.			JAN. 1ST, 1921.			LOSSES.				ADDI- TIONS.		TOTALS.		
	Resident.	Non-Resident.	Total.	Resident.	Non-Resident.	Total.	Transfer.	Resignation.	Dropped.	Death.	Transfer.	Election.	Loss.	Gain.	Increase.
Honorary Members.....	.....	3	3	.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Corresponding ".....	.....	1	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Members.....	762	3 232	3 994	780	3 464	4 244	.....	.....	9 48	73	*213	†167	130	380	250
Associate Members.....	694	4 015	4 709	738	4 289	5 027	211	28	153	14	†124	‡600	406	724	318
Associates.....	65	104	169	65	110	175	.....	1	3	1	.....	.....	15	9	15 6
Juniors.....	116	406	522	86	362	448	122	5	50	2	.....	†105	179	105	\$74
Fellows.....	.....	10	10	5	5	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	1 637	7 771	9 408	1 674	8 233	9 907	337	**43	254	91	337	887	725	1224	499

* 211 Associate Members, 1 Associate, 1 Junior.

† 3 Associates, 121 Juniors.

‡ 4 Reinstatements.

§ 9 Reinstatements.

¶ 1 Reinstatement.

§ Decrease.

**In the table 43 resignations are noted. There are in addition, 79 resignations which have been received but which have not yet been accepted by the Board of Direction.

The net increase in membership for the year is 499. This increase would have been much greater had not an abnormal number been dropped for non-payment of dues, 255 as against 36 the previous year. This action of the Board is not as drastic as would appear on the surface since in the last few years a large number of members greatly in arrears of dues had been carried on the rolls to give them a chance to recover financially from the adverse war conditions that had obtained.

The diagram on the following page shows the growth of the membership of the Society since 1871.

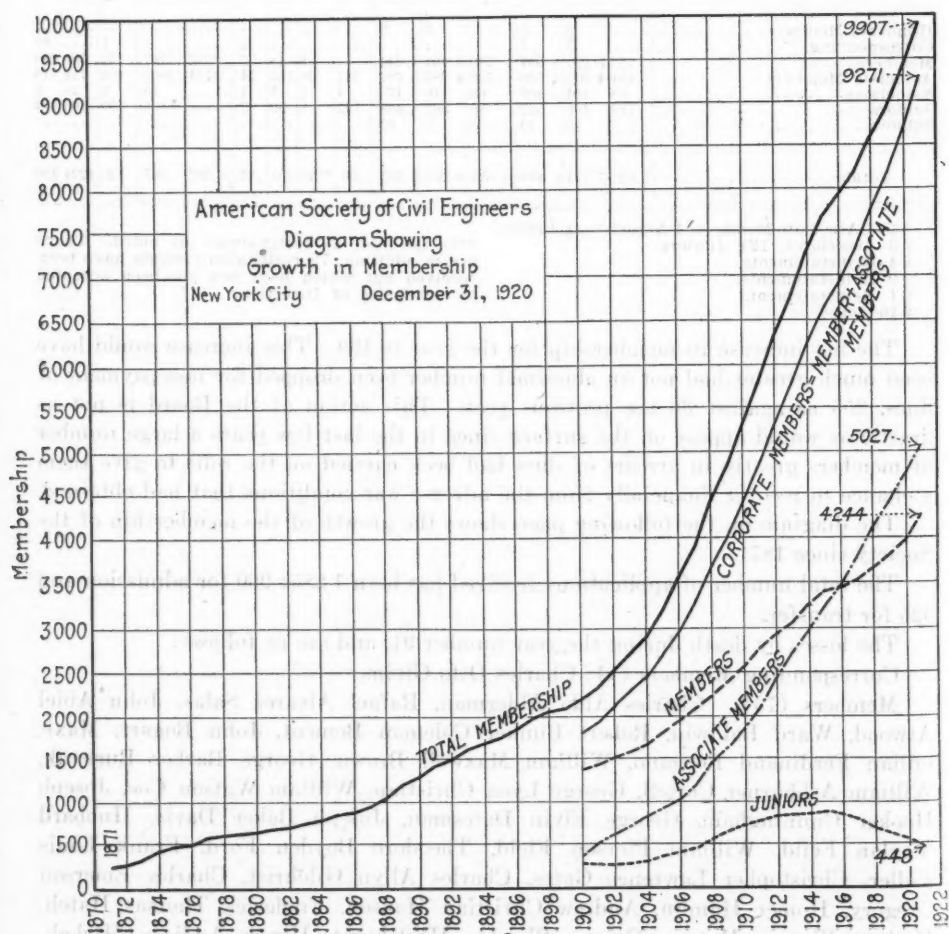
The total number of applications received has been 1 285: 960 for admission and 325 for transfer.

The losses by death during the year number 91, and are as follows:

Corresponding Members (1): Charles Otto Gleim.

Members (73): Charles Aldo Alderman, Rafael Alvarez Salas, John Abiel Atwood, Ward Baldwin, Robert Bunker Coleman Bement, John Bogart, Maximilian Ferdinand Bonzano, William Maxwell Brown, George Barker Burbank, William Ashburner Cattell, George Lyon Christian, William Watson Coe, Joseph Hooker Cunningham, George Elvin Datesman, Joseph Baker Davis, Hubbard Moylan Feild, William Pierson Field, Theodore Boyden Ford, Frank Louis Fuller, Christopher Lawrence Gates, Charles Allyn Gilchrist, Charles Emerson Gregory, Homer Hamlin, Andrew Christian Hansen, Frederick Thomas Hatch, Herbert Watson Hatton, George Blagden Hazlehurst, Henry Addison Hickok,

Edward Henry Holden, Robert Parsons Howell, Isaac Wendell Hubbard, Joseph Moss Knap, Richard Lamb, John Langton, Louis Julian Le Conte, Frederick William Lehnartz, George Leighton, Thomas Hooker Loomis, Archibald Byron Lueder, Alexander McClure Lupfer, Charles Joseph McDonough, Albon Platt Man, William Harley Moore, George Sullivan Morrill, Orlando Whitney Norcross, Philip à Morley Parker, Henry Cuyler Parsons, Arsène Perrilliat, Robert Winthrop Pratt, Isham Randolph, Alfred Raymond, George Staples Rice, Augustus Valentine Saph, David Chauncey Shepard, Charles William Smith, Edwin Foster Smith, Edmund Gybbon Spilsbury, Robert Parker Staats, Charles Russell Suter, Edwin Thacher, Chester Ashley Thomas, Ellis Dunn Thompson, Samuel Clarence Thompson, William Martin Torrance, Beverly Reid Value, Edgar Beach Van Winkle, George Washington Vaughan, Louis Bertrand Vaughan, Charles Edward Webster, Charles Austin Wentworth, George Weston, Paul Ludwig Wolfel, Willis Benton Wright.



Associate Members (14): Wilbur Vick Banister, Reginald Gillon Christophers, William Henry Dietrich, Thomas Pengelly Ellis, Erskine Hazard, George Merrick Herron, John Lewis Hildreth, Jr., Charles Clayton Huff, Frank Elmer King, Frank Edgar Osborn, Ambrose Packard, Ray Rolph Palmer, James Hilton Sherman, Harold Tait.

Associates (1): George Wellman Parsons.

Juniors (2): Harold Laselle Fiske, James Taylor Landreth.

The death of William Lyon Browne, M. Am. Soc. C. E., on November 24th, 1919, is also here recorded.

LIBRARY

The Engineering Societies Library received during 1920, a total of 2 337 volumes (1 081 by gift, 1 256 by purchase), 1 304 pamphlets (1 174 by gift, 130 by purchase), and 244 maps and plans, making a total of 153 320 now in the permanent collection.

Expenditures for the work of the Library amounted to about \$26 000. The total attendance for the year was 23 788. The attendance after 6 P. M. was 4 871. The average daily attendance was 78.

The work of reclassifying and recataloguing is proceeding steadily. During the last year 24 272 volumes have been catalogued, and 48 957 cards have been prepared and added to the catalogue.

The Service Bureau received from searches, translations, etc., about \$24 000. It made during the year 512 searches and copies of searches and 113 translations, totaling 352 970 words. The photostat has been in constant use and has turned out 35 904 prints.

During the year a Special Committee was appointed by the Library Board of the United Engineering Society, to increase the endowment of the Library. This Committee, under the chairmanship of Robert A. Cummings, M. Am. Soc. C. E., is actively engaged in this work. It is hoped that sufficient funds may be collected to place the Library on a firm financial foundation, which will permit a substantial enlargement of its service to members.

READING ROOM

The Reading Room of the Society was open 306 days from 9 A. M. to 6 P. M., and from 7 to 10 P. M. There was an attendance of 4 118, a daily average of about 14. A number of changes in the Reading Room, during the past year, were made by the Library Committee with the view of enhancing its usefulness.

The list of references to current engineering literature which is prepared by the assistants in the Reading Room required 89 pages and contained 3 802 classified references to 92 periodicals. Practically all the French and German periodicals which were not obtainable during the World War, have been restored to the list.

EMPLOYMENT SERVICE

The Engineering Societies Service Bureau has been conducted jointly by the Secretaries of the four Founder Societies. Its work has been administered at a total cost to the four Societies of \$12 431.66. This service has been rendered free of charge to members of the Founder Societies as well as to non-members who

were introduced by members. The success of the effort is indicated by the following tabulation:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Number of men registered.....	210	174	309	159	179	178	156	158	210	181	185	199	2 171
Number placed including those not registered..	138	93	119	96	139	144	135	132	162	174	144	103	1 579

COMMITTEES

There exist at present four Special Committees appointed to report on engineering subjects, namely, To Codify Present Practice on the Bearing Value of Soils for Foundations; Stresses in Railroad Track; Highway Engineering; and Bridge Design and Construction.

Since the last report the Special Committee on Regulation of Water Rights has been discharged.

The Special Committee to Consider and Recommend for Adoption a Specification for Bridge Design and Construction was authorized by a meeting of the Board of Direction held August 9th, 1920. It has been organized with an initial membership of nine.

The Board has also authorized a Special Committee on Research comprised respectively of the Chairmen of the Special Committees on Stresses in Railroad Track, Bearing Value of Soils for Foundations, and Bridge Design and Construction.

In addition to these Special Committees on engineering subjects, the Board, in accordance with the request of the Annual Convention, appointed a Committee to Consider Certain Proposed Amendments to the Constitution which were referred to a committee by the Annual Convention. This Committee was also empowered to suggest such further amendments as it might consider advisable. The Committee has been very active, and will present a report to the January Board meeting.

At the November 9th, 1920, meeting of the Board of Direction a Committee of Corporate Members was "appointed to consider and make recommendations to the Board on or before January 1st, 1921, of its suggestions for determining and governing the external relations of this Society with other engineering societies". There was also appointed a Committee consisting of all the living Past-Presidents of the Society, which Committee was requested to subsequently review and transmit to the Board the said Report of the Committee of Corporate Members, and taking cognizance of the history of the Society for the last three years, to give the Board the benefit of its advice.

PUBLICATIONS

Toward the middle of the year there came to the Society a threatened crisis in the handling of the publications. Printers' wages had been increased 21% over the prevailing rates of the preceding year. The price of paper had gone up 67% within six months. In addition to these increased prices of labor and materials,

there was an actual scarcity of paper and a printer's strike impending, all of which rendered it doubtful whether the publication of *Proceedings* might not be completely interrupted.

Under these conditions it seemed the part of wisdom to resort to some plan of economy whereby the publication of papers and discussions twice—once in *Proceedings* and once in *Transactions*—might be avoided.

Several schemes were evolved and after careful consideration it was decided to adopt at least as a temporary measure the method of publication which has obtained beginning with the August number of *Proceedings* and which method involved the following novel features:

1. The increase in width of type page from 4 in. to 4½ in.
2. The adoption of a 9-point on 11-point slug type.
3. The publishing of papers by abstract in *Proceedings*, with an order blank to be filled out by those members desiring the papers which were printed in full as separate pamphlets.

This plan has effected a saving to the Society of approximately \$6 500 during the half year as compared with what the similar cost would have been had the former style been retained, and what is even more important its adoption safeguarded the publications at a critical period.

Now, with the better outlook for the future both as to industrial conditions and the Society's income, there will exist for the incoming Board of Direction a less restricted choice in the determination of its policy and programme for publications.

During the year there have been issued ten numbers of *Proceedings*, and one Year Book. Carrying out the new plan for *Proceedings*, there have also been issued separately 66 pamphlets, *viz.*, 8 papers, 18 discussions, 38 memoirs, and 2 pamphlets containing Book Notices and the Current Engineering Index.

Volume LXXXIII of *Transactions*, dated 1919-1920, the publication of which was authorized by the Board of Direction at its meeting of April 19th, 1920, is practically all in the hands of the printers and will probably be issued to the membership early in 1921. The volume will contain approximately 2 450 pages of printed matter.

The stock of the various publications of the Society kept on hand for the convenience of members and others now amounts to 157 059 copies, the cost of which to the Society, for paper and press work only, has been \$23 443.97.

SUMMARY OF PUBLICATIONS FOR 1920.

	Issues.	Average edition.	Total pages.	Plates.	Cuts.
<i>Proceedings</i> (monthly numbers).....	10	10 142	2 014	10	260
Pamphlets (Papers, Discussions, Memoirs, Society Affairs).....	66	300	688	2	145
Year Book.....	1	10 000	365	1	...
Total	77	....	3 067	13	405

The cost of publications, as determined by the bills actually paid during the year, has been:

For Paper, Printing, etc., <i>Proceedings</i>	\$23 446.34
For Paper, Printing, etc., of 24 375 Extra Copies of Papers, Discussions, Memoirs, Technical Lists.....	3 811.40
For 5 400 Extra Copies of Separate Papers for <i>Transactions</i> , Vol. LXXXIII.....	1 268.11
For Plates and Cuts.....	2 552.27
For Copyright and Sundry Expenses.....	67.82
For Year Book.....	7 545.36
For <i>Transactions</i> , Vol. LXXXIII (on account).....	10 000.00
For Balance on 1919 Printer's Bill.....	585.09

Total	\$49 276.39
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Deduct amount received from sale of publications...	3 967.38
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Net expenditure for publications for 1920.....	\$45 309.01
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MEETINGS

Nineteen meetings were held during the year as follows: At the Annual Meeting 1; at the Annual Convention 3; and 15 other meetings all of which were held at Society Headquarters in the Engineering Societies Building.

At these meetings there were presented 9 formal papers; 5 of which were illustrated with lantern slides and 1 by motion pictures, 5 lectures and addresses, all of which were illustrated with lantern slides, and 3 informal discussions one of which was illustrated with lantern slides. The number of members and others who took part in the preparation and discussions of these papers, lectures, addresses, and informal discussions was 149.

At its meeting on August 9th, 1920, the Board of Direction authorized the Acting Secretary to make an arrangement with the New York Section whereby the latter has taken over the second meeting of the month to which all members of the Society, whether they are members of the Section or not, are invited. These second meetings for October, November, and December, therefore, have been held under the auspices of the New York Section and have been devoted to informal discussions of various engineering problems of the Metropolitan District.

The addresses, lectures, and informal discussions at the regular meetings of the Society, were as follows:

January 7th, 1920, "Military Maps, with Special Reference to the Application of Aerial Photography to Map-Making," by John P. Hogan, M. Am. Soc. C. E.

February 18th, 1920, "Human Elements in Modern Industrial Management", by Thomas C. Desmond, Assoc. M. Am. Soc. C. E.*

March 17th, 1920, "The Nation-Wide Demand for Improved Highways": An Informal Discussion.

May 19th, 1920, "The Different Side of South America as Seen by an Engineer", by Albert A. Northrop, M. Am. Soc. C. E.

* Now M. Am. Soc. C. E.

August 11th, 1920, "The Lure of the Northwest", by Frank Branch Riley.

September 1st, 1920, An Informal Discussion on the Proposed Amendments to the Constitution of the Society and on the Question Whether the Society Should Join the Federated American Engineering Societies as a Charter Member.

September 15, 1920, "Some Recent Engineering Developments in China and the Far East", by John R. Freeman, M. Am. Soc. C. E.

December 1st, 1920, "The Proposed Removal of High Bridge": An Informal Discussion.

The Annual Convention was held in Portland, Ore., from August 10th to 12th, 1920, inclusive.

The total attendance at the 20 meetings was about 3 745. The registered attendance at the Annual Meeting was 923, and at the Annual Convention 182.

MEDALS AND PRIZES

For the year ending July, 1919, prizes were awarded as follows:

The Norman Medal to William Barclay Parsons, M. Am. Soc. C. E., for his paper entitled "The Cape Cod Canal".

The J. James R. Croes Medal to D. B. Steinman, Assoc. M. Am. Soc. C. E.,* for his paper entitled "Stress Measurements on the Hell Gate Arch Bridge".

The Thomas Fitch Rowland Prize to O. H. Ammann, M. Am. Soc. C. E., for his paper entitled "The Hell Gate Arch Bridge and Approaches of the New York Connecting Railroad over the East River in New York City".

The James Laurie Prize to F. W. Gardiner and S. Johannesson, Members, Am. Soc. C. E., for their paper entitled "Manhattan Elevated Railway Improvements".

The Collingwood Prize for Juniors to Floyd A. Nagler, Jun. Am. Soc. C. E.,† for his paper entitled "Obstruction of Bridge Piers to the Flow of Water".

LOCAL SECTIONS

There are at the present time 27 Local Sections, four of which were organized during the year as follows:

Cincinnati Section

Iowa Section

New York Section

Providence (R. I.) Section

STUDENT CHAPTERS

At its meeting of April 20th, 1920, the Board authorized the formation of Student Chapters, and Chapters have been organized with an approximate membership of 360, as follows:

The Stanford University Student Chapter

The Braune Civil Engineering Society (University of Cincinnati) Student Chapter

The Civil Engineering Society of Rensselaer Polytechnic Institute Student Chapter

* Now M. Am. Soc. C. E.

† Now Assoc. M. Am. Soc. C. E.

The Drexel Institute Student Chapter
The Iowa State College Student Chapter
The Pennsylvania State College Student Chapter
The University of Pennsylvania Student Chapter
The Washington University Collimation Club Student Chapter

FINANCES

A review of the financial condition of the Society for the year indicates a more prosperous condition at its close than could have been anticipated during the first six months. This results largely from the unexpected increase in new members, success in collecting back dues, and a slight increase resulting from the raise in dues of non-residents in accordance with the change in the Constitution taking effect November 6th, 1920. These increased receipts were in part offset by the high prices of paper and printing and the expenditure of considerable sums in the issuance of an unusual number of questionnaires and ballots.

The Society approaches the coming year with a comfortable balance on hand and the assurance that its income will be sufficient to take care of the usual expenses and admit of some expansion in the work of Committees and the issuance of publications.

The Reports of the Secretary and of the Treasurer are appended.

By order of the Board of Direction,

HERBERT S. CROCKER,
Acting Secretary.

GENERAL BALANCE SHEET, DECEMBER 31st, 1920.
ACCOMPANYING THE REPORT OF THE ACTING SECRETARY.

ASSETS.		LIABILITIES.	
Three Lots (220 West 57th St.).....	\$350 000.00	1921 Dues paid in advance.....	\$47 008.68
Building (" ").....	194 523.52	Mortgage	200 000.00
Furniture (33 West 39th St.) (80% of original cost).....	30 145.65	Accrued Interest on mortgage Aug. 1st-Dec. 31st, 1920	4 166.70
Publications on hand (inventoried cost).....	23 443.97	Funds invested in Society House, Lots and Library*	30 915.78
10 New York City 4½% bonds (at par value)...	10 000.00	Herbert Steward Library Fund.....	2 000.00
Accrued interest on above (Sept. 1st-Dec. 31st, 1920).....	141.67	Joseph G. Swift Library Fund.....	1 000.00
Library:		Balance of Donation on Account of Work of Special Committee.....	2 039.28
Cash expended for books, etc.	\$22 122.22	Reserve Fund.....	\$7 000.00
Donations (estimated).....	72 310.83	Surplus	953 950.78
Equity in U. E. S. Building.....	486 792.79		
Alfred Noble Memorial (Loan).....	1 200.00		
Due from Members.....	\$8 027.48		
" " Non-Members	719.14		
Cash	41 653.95		
	<u>\$1 241 081.22</u>		<u>\$1 241 081.22</u>

* Compounding Dues Fund, \$14 655.00; Norman Medal Fund, \$1 000.00; Rowland Prize Fund, \$1 222.50; Collingwood Prize Fund, \$1 000.00; Fellowship Fund, \$13 038.28; Total, \$30 915.78.

REPORT OF THE ACTING SECRETARY FOR

TO THE BOARD OF DIRECTION OF THE

GENTLEMEN:—I have the honor to present a statement of Receipts and Disbursements for the fiscal year of this Society, ending December 31st, 1920. I also append a general Balance Sheet showing the condition of the affairs of the Society.

Respectfully submitted,

H. S. CROCKER,
Acting Secretary.

RECEIPTS.

Balance on Hand, January 1st, 1920.....		\$27 920.65
Entrance Fees.....	\$23 810.00	
Current Dues.....	108 222.41	
Past Dues.....	8 445.36	
Advance Dues.....	47 008.68	
Binding	3 404.18	
Certificates of Membership.....	1 132.17	
Badges	5 285.17	
Sale of Publications.....	3 967.38	
Interest	1 289.24	
Annual Meeting.....	1 926.78	
Miscellaneous	1 263.45	
Compounding Dues.....	975.00	
Refund from Chairman of Development Committee....	218.84	
From Sale of Old Books.....	611.95	
Rent from 57th St. Property.....	22 703.32	
		<hr/>
		230 263.93

\$258 184.58

THE YEAR ENDING DECEMBER 31st, 1920.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

DISBURSEMENTS.

Salaries of Officers.....	\$16 543.31	
Clerical Help.....	35 162.59	
Publications	49 276.39	
Postage	9 150.02	
General Printing.....	13 475.26	
Office Supplies.....	3 419.01	
Badges	5 433.63	
Certificates of Membership.....	1 047.70	
Binding	100.65	
Reading Room.....	585.58	
United Engineering Society:		
Rent for 15th and 16th Floors.....	11 901.22	
Library Board.....	6 500.00	
Engineering Council.....	5 000.00	
Meetings—Miscellaneous	1 574.17	
Furniture	2 029.88	
Mileage:		
Directors	12 340.05	
Nominating Committee.....	1 469.80	
Engineering Council.....	615.02	
Special Committees.....	4 728.62	
Annual Meeting.....	4 445.38	
Annual Convention.....	1 574.75	
*Work of Committees.....	1 943.64	
Prizes	259.41	
Interest	11 005.59	
Insurance	215.10	
Current Business.....	3 914.27	
Petty Expenses.....	58.25	
Miscellaneous	936.34	
Commission	2 000.00	
Retirement Allowance.....	5 325.00	
Employment Bureau.....	3 000.00	
American Engineering Standards Committee.....	1 500.00	
		\$216 530.63
Balance on hand, December 31st, 1920:		
In Garfield National Bank.....	\$40 153.95	
Cash on Hand.....	1 500.00	
		41 653.95
		\$258 184.58

* Development Committee, Joint Conference Committee, and Committee on Procedure; Special Committee to Report on Stresses in Railroad Track; Committee on Questionnaire Ballots; Committee on Redistricting of Membership and Committee on Referred Amendments.

**REPORT OF THE TREASURER OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS FOR THE YEAR
ENDING DECEMBER 31st, 1920.**

In compliance with the provisions of the Constitution, I have the honor to present the following report:

Cash on hand, December 31st, 1919.....		\$27 920.65	
Receipts from current sources, January 1st to December 31st, 1920.....	\$206 729.82		
Refund from Chairman of Development Committee...	218.84		
From Sale of Old Books.....	611.95		
Rent from 57th St. Property.....	22 703.32	230 263.93	
Payment of bills by audited vouchers for current business, January 1st to December 31st, 1920 (for Specification, see report of Acting Secretary).....	\$216 530.63		
Balance on hand, December 31st, 1920:			
In Garfield National Bank.....	\$40 153.95		
Cash on hand.....	1 500.00	41 653.95	
		<u>\$258 184.58</u>	<u>\$258 184.58</u>

Respectfully submitted,

ARTHUR S. TUTTLE,

Treasurer.

NEW BOOKS*

(From January 1st to January 31st, 1921)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

DONATIONS TO ENGINEERING SOCIETIES LIBRARY

DIELECTRIC PHENOMENA IN HIGH VOLTAGE ENGINEERING.

By F. W. Peek, Jr. Second Edition. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1920. 281 pp., pl., charts, tab. 9 x 6 in., cloth. \$3.50.

The author's object is to give in this book the properties of gaseous, liquid, and solid insulations and the methods of utilizing these properties to the best advantage in the problems of high-voltage engineering. A brief discussion of the dielectric circuit is included. This edition has been carefully corrected and supplemented by the data that have resulted from investigations since its predecessor appeared.

THERMO-ELECTROMOTIVE FORCE IN ELECTRIC CELLS.

By Henry S. Carhart. N. Y., D. Van Nostrand Company, 1920. 134 pp., charts, 7 x 5 in., cloth. \$2.00.

This little volume is a record of the author's researches, begun many years ago with those concerning the analysis of the temperature coefficient of voltaic cells. The chapter on the electromotive force of concentration cells has especial interest, as it shows the application of the Helmholtz equation to such cells, and the relation of the Nernst equation to this formula.

TELEPHONIC TRANSMISSION; THEORETICAL AND APPLIED.

By J. G. Hill. (Manuals of Telegraph and Telephone Engineering.) Lond. and N. Y., Longmans, Green and Co., 1920. 16 + 398 pp., diagrams, 9 x 6 in., cloth. \$7.00.

This volume is one of a series of treatises prepared under the editorship of Sir William Slingo, to deal comprehensively with the problems involved in the applications of electricity in telephony and telegraphy. It treats of the theory and practice of telephonic transmission, and reviews the work that has been done in Great Britain, America, France, Germany, and Japan, and is the work of a specialist connected with the British Post Office. Contents: Mathematical Formulas and Notes; The Infinite Line, Direct Current Case; The Equivalent Circuit, Direct Current Case; The Loading of Transmission Lines and the Design of Artificial Cables, Direct Current Case; The Human Voice in Telephony; The Application of Alternating Currents to Transmission Lines; Reflection and Power in Telephone Circuits; The Constants of Telephone Circuits; The Loading of Telephone Circuits, A. C. Case; Methods of Measurement on Transmission Lines, with Examples of Tests; The Standard Cable and Its Uses; Cost Problems in Telephonic Transmission; Transmission Formulas for Lines in Series, with Apparatus in Series and in Leak; The Thermionic Valve as a Telephonic Relay.

UNTERSUCHUNGEN UBER SCHWACHSTROMSTORUNGEN BEI EINPHASEN-WECHSELSTROM-

Bahnen. Bericht an die Königl. Schwedischen Eisenbahndirektion von der hierfür ernannten Kommission. Ins Deutsche Übertragen durch Franz Kuntze. München und Berlin, R. Oldenbourg, 1920. 159 pp., illus., diagrams, charts, 11 x 8 in., paper. 38 marks.

In discussions of the comparative merits of direct and single-phase current systems for the electrification of trunk-line railways, one of the most common objections to the latter system is the interference with neighboring telephone lines. The present volume is a German translation of the report of a commission appointed in 1915 to study this question for the Railway and Telephone Departments of Sweden and to propose remedies. The report describes the investigations carried out by the commission. These included an experimental study of interference on the Kiruna-Riksgränsen Railway, a series of direct measurements on the nature of interference phenomena, a theoretical investigation of the effects of conductors on one another, suggestions for mitigating interference and reports on the theory, design, construction, and action of negative boosters.

FREILEITUNGSBAU, ORTSNETZBAU.

By F. Kapper. Zweite Auflage. München und Berlin, R. Oldenbourg, 1920. 8 + 365 pp., illus., diagrams, charts, tab., 9 x 6 in., paper. 40 marks.

This work on the construction of aerial electric lines is a practical book, fully equipped to answer the questions of the engineer in charge of erection. Theory is reduced to small dimensions, but the information on actual methods is an ample presentation of current German practice, in minute detail. Both transmission and distribution systems are included.

*Unless otherwise specified, books in this list have been donated by the publishers.

DIE WECHSELSTROMBAHN-MOTOREN.

Von Max Gerstmeyer. München und Berlin, R. Oldenbourg, 1919. 193 pp., illus., diagrams, 9 x 6 in., paper. 13.60 marks.

Having in mind the increasing use of the single-phase motor for railway operation in Europe, the author has prepared this brief account of its principles and chief types, for electrical engineers who are not specially informed concerning its theory and uses.

THE THEORY OF MACHINES.

By Robert F. McKay. Second Edition. Lond., Edward Arnold, 1920. 8 + 440 pp., diagrams, 9 x 6 in., cloth. \$6.75. (Gift of Longmans, Green & Co.)

Although many books exist which cover one or two special parts of this subject, the author believes this to be the first attempt at a systematic, comprehensive review of the whole. The volume is intended for students and engineers, many exercises being included for use by the former. This edition is practically identical with the first, only minor additions and alterations having been made. Contents: Mechanics; Kinematics of Machines; Dynamics of Machines.

PROPERTIES OF STEAM AND THERMODYNAMIC THEORY OF TURBINES.

By H. L. Callendar. N. Y., Longmans, Green & Co.; Lond., Edward Arnold, 1920. 531 pp., diagrams, tab., 9 x 6 in., cloth. \$14.00.

This work gives a connected account of the conclusions resulting from the author's extended experimental and theoretical investigations of the problems depending primarily on the properties of steam. It is intended therefore to supplement treatises written from an engineering standpoint, by presenting the thermodynamical aspect of the problem. The book explains the origin of the author's equations for steam, shows how well his theory has fitted with subsequent work, and how his equations and tables may best be applied to more recent developments. A considerable portion of the book deals with the thermodynamical theory of turbines, and here some new methods are introduced which the author believes will be useful to engineers. The book includes his steam tables.

HEAT ENGINES; A TEXT-BOOK FOR ENGINEERING STUDENTS.

By David Allen Low. N. Y. and Lond., Longmans, Green & Co., 1920. 7 + 592 pp., illus., diagrams, charts, tab., 9 x 6 in., cloth. \$6.50.

The author has attempted to compress into one volume of moderate dimensions sufficient material for a two-years' course in the subject, in which its theoretical and practical sides would be combined. Numerous exercises for the student are included, most of which are original.

THE GASOLINE AUTOMOBILE; ITS DESIGN AND CONSTRUCTION:

Vol. I, The Gasoline Motor. By P. M. Heldt. Sixth Edition. Nyack, N. Y., P. M. Heldt, 1920. 6 + 633 pp., illus., diagrams, charts, 9 x 6 in., cloth. \$6.00.

Continued development of the internal combustion engine has made necessary a further revision of this volume. The chapters on the cylinder and the crankcase and oiling system have been rewritten, and that on the piston, piston rings, and piston pin has been revised to accord with modern practice. New material on other subjects has been added in an appendix as well as new plates.

A TEXTBOOK OF CHEMICAL ENGINEERING.

By Edward Hart. Easton, Pa., The Chemical Publishing Co., 1920. 12 + 211 pp., illus., diagrams, 9 x 6 in., cloth. (Gift of the Author.)

The contents give an indication of the scope of Dr. Hart's new book, which is based on his courses in Lafayette College. The treatment of the subject is brief and elementary, but thoroughly practical. Contents: Materials; Location of Works; Boilers; Prime Movers; Plumbing; Crushing; Dissolving; Filtration; Tanks; Evaporation; Crystallization; Drying; Distillation; Absorption of Gases; Mixing and Kneading; Containers.

AUTOMOTIVE IGNITION SYSTEMS.

By Earl I. Consoliver and Grover I. Mitchell. (Engineering Education Series.) N. Y. and Lond., McGraw-Hill Book Company, Inc., 1920. 10 + 269 pp., illus., diagrams, 9 x 6 in., cloth. \$2.50.

This is a systematic course of study of the ignition systems used on automobiles, tractors, and airplanes, for those who have to install, adjust, and repair these systems in the factory and repair shop.

AEROPLANE STRUCTURAL DESIGN;

A Book for Designers, Draughtsmen and Students. By T. H. Jones and J. D. Frier. Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1920. 267 pp., plates, tab., charts, diagrams, 8 x 6 in., cloth. \$7.50.

Although several valuable treatises exist dealing with the problems of sustentation, stability, and aerodynamics generally, the authors feel a need for a book treating of the structural strength of the aeroplane, in which the loading of it and the methods of estimating its strength under

load are discussed definitely and practically. This volume treats in detail of the wings, fuselage, tail plane and elevators, landing gear and rear skid, control surfaces, flying controls, and details, and is equipped with numerous tables of data needed by the designer. Complicated mathematical discussions are avoided.

SCHMIEDE UND SCHMIEDE-TECHNIK:

Band I. By C. Oetling. München und Berlin, R. Oldenbourg, 1920. 13 + 608 pp., illus., diagrams, 11 x 8 in., paper. 90 marks.

This volume is the outgrowth of a work submitted in 1911 to the Verein deutscher Maschinen-Ingenieure in competition for a prize offered for systematic study of the value of new methods and apparatus for forging. The report has been expanded, at the request of the Prize Committee, into an exhaustive examination of forge shop methods. The present volume, the first of two, was printed in 1914, but has only now been published. It discusses the fuels, heating furnaces, methods of controlling heat, forging hammers and presses, shears, saws, welding, measuring instruments, cranes and conveyors. The second volume will treat of heat-treating, compressed air machinery, and of the effect of the war on labor. The volume is elaborately illustrated.

RESEARCH AND METHODS OF ANALYSIS OF IRON AND STEEL AT ARMCO.

Second Edition. Middletown, Ohio, The American Rolling Mill Co., 1920. 220 pp., illus., 9 x 6 in., cloth. \$4.00.

This volume describes the methods for the magnetic, physical and microscopical testing and chemical analysis of steel used in the laboratories of the American Rolling Mill Company.

TANKS IN THE GREAT WAR, 1914-1918.

By J. F. C. Fuller. N. Y., E. P. Dutton and Company, 1920. 24 + 321 pp., front., maps, pl., 9 x 6 in., cloth. \$9.00.

This volume, by a former Chief General Staff Officer of the Tank Corps of the British Army, is a readable account of the genesis of the tank and of the part played by it in the Great War. The work of the French, German, and American Tank Corps is covered also.

COAL IN GREAT BRITAIN.

By Walcot Gibson. Lond., Edward Arnold, 1920. 8 + 311 pp., pl., maps, illus., 9 x 6 in., cloth. \$7.50. (Gift of Longmans, Green and Company.)

The present work is intended to supply mining engineers, mine owners, and students with a concise account of the more important facts relating to the geology of coal in general, and to the coalfields of Great Britain in particular. The earlier chapters are reproduced, with additions, from the author's "Geology of Coal and Coal-Mining", now out of print. The remainder of the book, dealing with the coalfields, is based on thirty years' personal experience and on various publications.

GEOLOGY OF PETROLEUM.

By William Harvey Emmons. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 14 + 610 pp., illus., maps, 9 x 6 in., cloth.

The author has tried to present, as briefly as practicable, a perspective of the data on the geology of petroleum, suitable for students familiar with the operation of geologic processes and the principles of stratigraphy. The book discusses the surface indications of petroleum, openings in rocks, the association of petroleum and salt water, reservoir rocks and covering strata, properties and origin of petroleum and natural gas, maps and logs, accumulation of petroleum, structural features of oil and gas reservoirs, deformation of petroliferous strata, metamorphism of petroleum, gas pressure and oil recovery, petroliferous provinces and petroleogenic epochs. Brief sketches of the important oil fields of the world are included, and numerous references are given to the literature on them.

PETROLEUM REGISTER; AN ANNUAL DIRECTORY AND STATISTICAL RECORD

Of the Petroleum Industry in the United States, Canada, and Mexico, 1921. N. Y., Oil Trade Journal, Inc. 640 pp., 12 x 9 in., cloth. \$10.00.

This new edition of the register has been revised and corrected up to the last months of 1920, so that it represents the latest available information. Like its predecessors it attempts to serve as a complete catalogue of the industry by including both those engaged in the industry and those who manufacture and sell the materials needed by the oil trade. The book lists the refiners, marketers, and jobbers, producers, pipe lines, natural gas, gasoline manufacturers, and oil associations in the United States, and the more important firms in Canada and Mexico. Statistics of production, consumption, and distribution are included, as are maps of the important oil-producing States.

THE TECHNICAL EXAMINATION OF CRUDE PETROLEUM, PETROLEUM PRODUCTS, AND

Natural Gas. By William Allen Hamor and Fred Warde Padgett. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1920. 9 + 591 pp., illus., tab., charts, diagrams, 9 x 6 in., cloth. \$6.00.

This book is designed to present the methods in use for the examination and evaluation of natural gas, crude petroleum, and oil-shale, and their important products. It includes the

procedures for the physical and chemical tests which are recognized as essential, together with tables of the necessary physical and chemical data. Very full bibliographic references are given.

CHEMISTRY AND CIVILIZATION.

By Allerton S. Cushman. Boston, Richard G. Badger. 151 pp., ports., 8 x 6 in., cloth. \$2.50.

The author of this work has attempted a brief, readable account of what chemistry has done, is doing, and hopes to do for mankind, in which the relation of the present and the future to the past will be clearly indicated. Attention is especially given to the industrial applications of discoveries.

RECENT ADVANCES IN ORGANIC CHEMISTRY.

By Alfred W. Stewart. Fourth Edition. Lond. and N. Y., Longmans, Green and Co., 1920. 359 pp., 9 x 6 in., cloth. \$7.50.

The author of this work discusses the subject from a synthetic point of view, his object being "to illustrate the principles upon which modern chemistry moves—not stands—and to undermine the conservatism which exists in all but strikingly original minds". Science is to him not a mere collection of data, but rather a rapidly changing series of hypotheses by means of which we attempt to group the facts with which we are acquainted. This edition includes a new chapter on unsolved problems, and other chapters have been revised and extended.

EMINENT CHEMISTS OF OUR TIME.

By Benjamin Harrow. N. Y., D. Van Nostrand Co., 1920. 16 + 248 pp., ports., pl., 8 x 6 in., cloth. \$2.50.

In selecting the subjects of these biographical sketches, the author has attempted to include those whose achievements have intimately affected chemical progress during the past generation or so, and thus to write a history of the chemistry of our times, centered around some of its leading figures. The book emphasizes the personal side. It is non-technical in character, and intended for laymen as well as scientists. Brief bibliographies are included. Contents: Perkin and Coal-Tar Dyes; Mendeleeff and the Periodic Law; Ramsay and the Gases of the Atmosphere; Richards and Atomic Weights; van't Hoff and Physical Chemistry; Arrhenius and the Theory of Electrolytic Dissociation; Moissan and the Electric Furnace; Madame Curie and Radium; Victor Meyer and the Rise of Organic Chemistry; Remsen and the Rise of Chemistry in America; Fischer and the Chemistry of Foods.

THE MAKING OF HERBERT HOOVER.

By Rose Wilder Lane. N. Y., The Century Co., 1920. 6 + 365 pp., port., 8 x 5 in., cloth. \$2.50.

Upon the foundation of documents, letters, and diaries, and information supplied by Charles K. Field, a friend and college classmate of Mr. Hoover, Mrs. Lane has prepared an informal, readable account of his life. The book is unusual in method, but achieves success as an interpretation of the man.

THE CENTENARY VOLUME OF CHARLES GRIFFIN AND COMPANY, LTD., 1820-1920.

Lond., Charles Griffin and Co., Ltd., 1920. 290 pp., ports., pl., fac-sims., 9 x 6 in., cloth.

This volume is issued to commemorate the hundredth anniversary of the entrance of this well-known firm into the field of technical book publishing. It includes an introduction by Lord Moulton, a history of the firm, and chapters on the progress of scientific literature in various fields during the last hundred years, as marked by its publications. Among the contributors are T. Hudson Beare, Sir W. S. Abell, William Gowland, and Henry Louis.

TECHNISCHER LITERATURKALENDER.

2. Ausgabe, 1920. München-Berlin, R. Oldenbourg. 441 pp., front., 8 x 6 in., cloth. 40 marks.

This is a "who's who" of living German writers on technical subjects, compiled by the Chief Librarian of the German Patent Office. About 7 000 names are included, and the information includes date of birth, address, education, occupation, writings, and specialty. This edition contains a thousand names more than that of 1918, and has also an index by specialties and a list of deaths during 1918 and 1919.

PLANTATION RUBBER AND THE TESTING OF RUBBER.

By G. Stafford Whitby. (Monographs on Industrial Chemistry.) N. Y. and Lond., Longmans, Green and Co., 1920. 16 + 559 pp., pl., diagrams, 9 x 6 in., cloth. \$9.50.

The circumstance that the supply of raw rubber is now chiefly derived from plantations, where its preparation can be controlled technically, renders possible the development of co-operation between the producer and the manufacturer, and gives importance to the present account of the preparation of plantation rubber and of present knowledge of exact methods of testing and evaluating raw rubber. The book includes an account of investigations made by physicists into the physical properties of rubber and an extensive bibliography on the subjects covered by the volume.

MARGARINE.

By William Clayton. (Monographs on Industrial Chemistry.) Lond. and N. Y., Longmans, Green & Co., 1920. 187 pp., pl., illus., 9 x 6 in., cloth. \$4.75.

This monograph is the first in any language, the author states, to give an account of the modern processes of manufacture of margarine. The chemistry of its constituents is discussed, and the methods of their analysis, as well as of the finished product, are described in detail. Chapters are devoted to butter and renovated butter, and lard compound. A chapter on nutritional chemistry deals with recent investigations on vitamins. References to the principal patents and a very full bibliography are included.

PHYSIOGRAPHY.

By Rollin D. Salisbury. (American Science Series—Advanced Course.) Third Edition, Revised. N. Y., Henry Holt and Co., 1919. 15 + 676 pp., pl., illus., 9 x 6 in., cloth. \$4.00.

The new edition of Professor Salisbury's well-known textbook has not been changed in plan, but has been thoroughly revised throughout and rewritten in considerable part. The text is intended for students of early college grade and represents the course given in the University of Chicago. The book is distinguished by its wealth of illustration and its lists of references to other literature.

CONTRACTS IN ENGINEERING.

By James Irwin Tucker. Second Edition. N. Y. and Lond., McGraw-Hill Book Co., 1920. 331 pp., 9 x 6 in., cloth. \$4.00.

This book is intended as a practical course showing the contractual basis of engineering work and of business at large, and as a textbook for engineering students with no opportunity for extended study of legal principles. It aims to present those facts and rules which seem likely to be of most value to an engineer in his professional and business career and to give him substantial information on many legal matters.

FACTORY ORGANIZATION AND ADMINISTRATION.

By Hugo Diemer. Third Edition. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 15 + 398 pp., illus., 9 x 6 in., cloth. \$4.00.

This book is for officers of manufacturing corporations, works managers, superintendents, accountants, and those in charge of such activities as purchasing, stores, costs, and production. The present edition has been revised to conform with the evolution of practice and standards, particularly in relation to organization, personnel problems, and the functional control of production. An extensive bibliography is included.

WINNING THE PUBLIC.

By S. M. Kennedy. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1920. 168 pp., port., 9 x 6 in., cloth. \$2.50.

This volume includes the substance of various addresses delivered before technical and trade associations during recent years, in which are discussed the relations of public utilities with those whom they serve and the methods by which public confidence and good will can be secured.

A HISTORY OF THE CONCEPTIONS OF LIMITS AND FLUXIONS IN GREAT BRITAIN

From Newton to Woodhouse. By Florian Cajori. Chic. and Lond., The Open Court Publishing Co., 1919. 8 + 299 pp., ports., 8 x 5 in., cloth. \$2.00.

In this small volume, Dr. Cajori reviews the history of an important event in the history of mathematics, the conception of fluxions advanced by Newton, the controversies with Berkeley and others, and the development that the theory underwent in Great Britain during the Eighteenth Century.

EXPORTER'S GAZETTEER OF FOREIGN MARKETS, 1920-21.

Compiled and Edited by Lloyd R. Morris. N. Y., The American Exporter. 23 + 766 pp., maps, tab., 9 x 6 in., cloth. \$10.00.

This Gazetteer is planned to present precisely facts about markets which have heretofore been obtainable only in scattered primary sources. The information includes the area and population of each country, the population of its principal towns, its commerce, production, and industry, telegraphs, telephones, and railroads, money, weights and measures, commercial language, principal shipping routes, customs tariff, consular regulations and representation, and similar matters. Maps of the principal countries are included. Foreign currencies and measurements have been converted into American equivalents.

THE NEW STONE AGE.

By Harrison E. Howe. (The Century Books of Useful Science.) N. Y., The Century Co., 1921. 289 pp., pl., 8 x 5 in., cloth. \$3.00.

The "new stone age" is the age of cement and concrete. The author tells in every-day language the story of cement, its history, manufacture, and uses, in the hope that his book will

lead to a better appreciation and more thorough understanding of it by the non-technical user, and lead him to use it with due regard not only for its excellent characteristics but for its necessary limitations.

CONCRETE WORK:

Vol. I. By William Kendrick Hatt and Walter C. Voss. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1921. 451 pp., illus., diagrams, tab., 8 x 6 in., cloth. \$4.00

This is the first part of a two-volume manual intended to extend the scope of work now possible to the concrete worker of unguided experience by bringing him to an intelligent understanding of the scientific principles underlying his art, and by introducing him to the wider opportunities that exist for him in modern construction. The method used to present the subject is based on the experience acquired by the Committee on Education and Special Training of the War Department, in training 130 000 soldiers in the various trades connected with military operations. This volume of the manual contains the development of principles and information of methods of construction and standards necessary for the construction of the definite building.

A TREATISE ON REINFORCED CONCRETE.

By W. Noble Twelvetrees. Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1920. 264 pp., pl., 8 x 6 in., cloth. \$7.50.

In this volume the author has endeavored to set forth as clearly as possible the general characteristics and distinctive properties of reinforced concrete and its constituents, to discuss in a systematic manner the principles underlying the design of homogeneous members, and to show how these principles may be applied to the evolution of formulas for the design of reinforced concrete members of different classes. It is restricted to fundamental principles and presents a complete series of formulas for the principal classes of members used in engineering and building construction. The book is the first to use the standard notation adopted by the Concrete Institute. This notation is given in full, with an explanatory foreword.

DRANG UND ZWANG; EINE HOHERE FESTIGKEITSLEHRE FÜR INGENIEURE.

Von Aug. Föppl und Ludwig Föppl. München und Berlin, R. Oldenbourg, 1920. 2 vol., 10 x 7 in., paper. 72 marks.

The authors of these volumes discuss some of the more abstruse problems of stress and strain. The work is intended especially for engineers who are fitted, by practical experience, to follow a difficult investigation and apply its results. A knowledge of the elementary theory of the mechanics of materials is expected of the reader. Contents: Die allgemeinen Grundlagen; Die Sätze über die Formänderungsarbeit; Die Biegesteifigkeit der Platten; Die Scheiben; Die Schalen; Die Drehfestigkeit der Stäbe; Die Umdrehungskörper; Die Härte; Die Eigenspannungen; Die Knick- und Ausweichgefahr.

ADVANCED SHOP DRAWING.

By Vincent C. George. (Engineering Education Series.) N. Y. and Lond., McGraw-Hill Book Co., Inc., 1920. 9 + 147 pp., diagrams, illus., 9 x 6 in., cloth. \$1.60.

This textbook is intended for the student who has had some preliminary training in mechanical drawing and who wishes a practical knowledge of drafting as applied to various lines of engineering. Emphasis is placed on such subjects as working drawings, pictorial representation, patent office, electrical and structural drawing, piping layouts and sheet metal work.

IRRIGATION; ITS PRINCIPLES AND PRACTICE AS A BRANCH OF ENGINEERING.

By Sir Hanbury Brown. Third Edition, Revised. Lond., Constable & Co., Ltd.; N. Y., D. Van Nostrand Co., 1920. 15 + 305 pp., pl., illus., 9 x 6 in., cloth. \$6.00.

The primary object of this treatise is to collect the guiding principles on which irrigation engineering is based and to furnish illustrations of their application in existing canal systems. The present edition is little changed from the preceding one, except by the addition of an appendix containing information on changes that have taken place in the works used as illustrations. The illustrative works are taken from Indian and Egyptian practice and are based on the author's personal acquaintance with methods in these countries.

MEMBERSHIP

(From January 7th to February 3d, 1921)

ADDITIONS		MEMBERS		Date of Membership.
BAKER, PERCIVAL STEVENS. Engr., Bridges and Bldgs., P. & R. Ry., 520 Reading Terminal, Philadelphia, Pa.	} Jun. } Assoc. M. } M.		Sept. 4, 1906 Oct. 2, 1907 Jan. 18, 1921	
BAKEWELL, JOHN, JR. Archt. (Bakewell & Brown), 251 Kearny St., San Francisco, Cal.			Jan. 17, 1921	
CHICKERING, GEORGE WILLIAM. Archt. and Engr. (Peare, Quiner, Nevin & Chickering), 6 Beacon St., Boston, Mass.			Jan. 17, 1921	
CONLEY, WALTER ABBOTT. Care, Am. Bridge Co., 30 Church St., New York City.			Jan. 17, 1921	
CONWAY, NORMAN BUTLER. Cons. Engr., Box 257, Yuma, Ariz.	} Assoc. M. } M. } Jun.		Dec. 6, 1915 Jan. 18, 1921 Jan. 2, 1912	
DE MEY, EDOUARD JEAN BERNARD. Chf. Engr., Toupet, Beil & Conley, Inc., 5814 Ellsworth Ave., E. E. (Res., 5714 Northumberland St., Squirrel Hill), Pittsburgh, Pa. .		} Assoc. M. } M.		May 15, 1917 Jan. 18, 1921
DERICKSON, RICHARD BARNETT. Hydrographic and Geodetic Engr.; Chf. of Section of Field Work, U. S. Coast and Geodetic Survey, 202 Burke Bldg., Seattle, Wash.				Jan. 17, 1921
FOGG, RALPH JUSTIN. Prof. of Civ. Eng. and Head of Dept., Lehigh Univ., Bethlehem, Pa.	} Assoc. M. } M.		Nov. 25, 1919 Jan. 18, 1921	
GANSER, SYLVAN EARLE. Bridge Dept., N. P. Ry. (Res., 2010 Portland Ave.), St. Paul, Minn.		} Assoc. M. } M. } Jun.		Jan. 2, 1912 Jan. 18, 1921 Sept. 5, 1911
GODFREY, STUART CHAPIN. Maj., Corps of Engrs., U. S. A., Wilson Dam, Florence, Ala.	} Assoc. M. } M.			Sept. 12, 1916 Jan. 18, 1921
HOWELL, ROBERT PHILIP. Maj., Corps of Engrs., U. S. A., Camp A. A. Humphreys, Va.				Nov. 9, 1920
KEEFE, MERTON ROSCOE. Gen. Supt., Ulen Contr. Co., Allaben, N. Y.			Dec. 6, 1920	
KINGSLEY, HENRY RAY. Chf. Engr., D. H. Burnham & Co., 1045 Rookery Bldg., Chicago, Ill.			Nov. 9, 1920	
LEGARÉ, THOMAS KEITH. Dist. Engr., Shearman Concrete Pipe Co., 1327 Main St., Columbia, S. C.	} Assoc. M. } M.		Mar. 14, 1916 Jan. 18, 1921	
MCWHORTER, ROGER BARTON. Asst. Div. Engr., Miami Con- servancy Dist., Hamilton, Ohio.		} Assoc. M. } M. } Jun.		Mar. 13, 1917 Jan. 18, 1921 Oct. 2, 1906
MATLAW, ISAAC SOLON. Engr. and Gen. Supt., A. W. King. 2164 Westchester Ave., New York City.	} Assoc. M. } M.			July 1, 1909 Jan. 18, 1921
MORIGAKI, KIICHIRO. Chf. Engr., Kobe Harbor Works, Onohama, Kobe, Japan.				Nov. 9, 1920
MORSE, WILLIAM CHESTER. Engr., Sluicing Dept., Puget Sound Bridge & Dredging Co., 810 Central Bldg., Seattle, Wash.			Jan. 17, 1921	
MUNN, JAMES. Care, U. S. Reclamation Service, Denver, Colo.			Jan. 17, 1921	
NEWTON-HOWES, ROBERT WILLIAM. Dist. Engr., Federated Malay States Rys., Kuala Krau, Pahang, Federated Malay States.			Oct. 11, 1920	
PARKHILL, WALTER ROY. Chf. Engr. Appraiser for the Federal Land Bank of Berkeley, Berkeley, Cal.			Nov. 9, 1920	
SEELYE, THEODORE EDWARD. (Gannett, Seelye & Fleming, Inc.), 204 Locust St., Harrisburg, Pa.			Nov. 9, 1920	

MEMBERS (Continued)

		Date of Membership.
SMITH, JONATHAN RHODES. Care, Post & McCord, 101 Park Ave., New York City.....	Assoc.	Dec. 5, 1911
	Assoc. M.	May 7, 1913
	M.	Jan. 18, 1921
SPINKS, JOHN DAVIDSON. Winston-Salem, N. C.....	Assoc. M.	Oct. 7, 1914
	M.	Jan. 18, 1921
STEPHENS, HAMILTON MORTON. Constr. Mgr., Du Pont Eng. Co., Box 481, Detroit, Mich.....		Jan. 17, 1921
STROHL, RICHARDS MERLE. Chf. Engr., Dept. of Drainage, Irrig. and Flood Control, The Ludlow Engrs., Inc., Winston-Salem, N. C.....	Jun.	May 31, 1910
	Assoc. M.	June 3, 1915
	M.	Jan. 18, 1921
SUMNER, WALTER AUGUSTUS. (Sumner Missillier Co.), 114 West 44th St., New York City.....		Jan. 17, 1921
SWECKER, CLEOPHUS. County Road Engr., Philippi, W. Va.....	Assoc. M.	Sept. 10, 1918
	M.	Jan. 18, 1921
THOMPSON, PERRY. San. Engr., City of Yonkers, 3 Hamilton Ave., Yonkers, N. Y.....		Jan. 17, 1921
VAN DER VEEN, HERMAN. Cons. Engr. to the Ministry of Interior, 28 Ta P'ai Fang Hutung (East City), Peking, China.....		Nov. 9, 1920
WELLS-JONES, ARTHUR JOHN. Engr. in Chg., Tarka River Storage Survey, Irrig. Dept., Uitenhage, South Africa.....		June 1, 1920
WHITE, LAZARUS. Pres., Spencer, White & Prentis, Inc., 47 West 42d St., New York City.....	Jun.	May 1, 1900
	Assoc. M.	Feb. 4, 1903
	M.	Jan. 18, 1921
WOOD, DANA MELVIN. Engr., Stone & Webster, Inc., 147 Milk St., Boston (Res., 22 Myrtle St., Belmont), Mass.....	Assoc. M.	Dec. 6, 1915
	M.	Jan. 18, 1921

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ANGLE, JAMES MACFARLANE. Asst. Engr., Morris Knowles, Inc., 5728 Baum Boulevard, Pittsburgh, Pa.....		Jan. 17, 1921
ARMS, LEO MURRY. Asst. Highway Engr., Illinois State Highway Dept., 302 Apollo Theatre Bldg., Peoria, Ill.	Jun.	Sept. 11, 1917
	Assoc. M.	Jan. 17, 1921
BAGGE, FRANK. Constr. Supt., Hegeman-Harris Co., 2550 Bainbridge Ave., New York City.....		Jan. 17, 1921
BECKER, WILLIAM CHRIS EMIL. Asst. Engr., Bridge Dept., Mo. Pac. R. R., 3969 Sullivan Ave., St. Louis, Mo.....		Jan. 17, 1921
BOCKEMOEHLE, CLINTON LINUS AUGUST. Asst. Supt., J. Goldberg & Sons, 7500 Independence Ave., Kansas City, Mo.....		Jan. 17, 1921
BRAGONIER, ARTHUR TAYLOR. Instr., Civ. Eng. Dept., Coll. of Eng., West Virginia Univ., Morgantown, W. Va..	Jun.	May 15, 1917
	Assoc. M.	Jan. 17, 1921
BUCHER, HAROLD FOLLMER. Employment Mgr., Philadelphia Co. and Affiliated Corporations, 435 Sixth Ave., Pittsburgh, Pa.....	Jun.	Oct. 9, 1917
	Assoc. M.	Jan. 17, 1921
BUIE, WILSON ROBERT, JR. Chf. Engr. and Estimator, John M. Kelly Contr. Co., 507 Federal St., Camden, N. J.....		Oct. 11, 1920
BURKE, MICHAEL JOSEPH. Asst. Engr., C., M. & St. P. Ry., Room 315, O. & W. Station, Seattle, Wash.....	Jun.	June 16, 1919
	Assoc. M.	Jan. 17, 1921

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COSGROVE, KARL McCORTLE. Cons. Engr., Cambridge } Jun.	Sept. 2, 1914	
Savings Bank Bldg., Cambridge, Ohio..... } Assoc. M.	Jan. 17, 1921	
DEEDS, JOHN FRANCIS. Hydr. Engr., U. S. Geological Survey, Wash- ington, D. C.....	Jan. 17, 1921	
DEISER, NORMAN ARTHUR. Supt., Turner Constr. Co., 367 } Jun.	June 4, 1913	
Crown St., Brooklyn, N. Y..... } Assoc. M.	Jan. 17, 1921	
FRIEDMANN, CARL ALLEN. With Union Oil Co. of California, 1308 Union Oil Bldg., Los Angeles, Cal.....	Jan. 17, 1921	
FRIEL, FRANCIS DE SALES. Asst. Plant Mgr. and Asst. Chf. Engr., Penn Steel & Iron Corporation, Lancaster (Res., 1739 Wallace St., Philadelphia), Pa.....	Jan. 17, 1921	
GALE, ALBERT GARLAND. 15 Rockaway Ave., Marblehead, Mass.....	Aug. 9, 1920	
GATES, HOWARD BABCOCK. Res. Engr., The J. G. White Eng. Corpora- tion, 106 West Washington St., Los Angeles, Cal.....	Jan. 17, 1921	
HAMLIN, GEORGE WILLIS. Asst. Engr., Cleveland Water Dept., 12913 Beachwood Ave., S. E., Cleveland, Ohio.....	Jan. 17, 1921	
HAUPT, CASPER WISTAR. Asst. Engr., Strobel Steel Constr. Co., 314 South Federal St., Chicago, Ill.....	Jan. 17, 1921	
HOFFERT, JOHN RAYMOND. Dist. Engr., Pennsylvania Dept. of Health, Camp Hill, Pa.....	Dec. 6, 1920	
HORWEGE, ALVIN ARTHUR. Div. Engr., Nevada State High- } Jun.	Oct. 29, 1912	
way Dept., Box 2051, Reno, Nev..... } Assoc. M.	Jan. 17, 1921	
JACOBY, CORNELIUS. Asst. Engr., So. Ry., 1300 Pennsylvania Ave., Room 814, Washington, D. C.....	Jan. 17, 1921	
JOHNSON, HARVEY STONE. Asst. Engr., The Bossert Cor- } Jun.	April 1, 1914	
poration, 1408 Oneida St., Utica, N. Y..... } Assoc. M.	Jan. 17, 1921	
KOLYN, MARION DEN HERDER. Prof., Civ. Eng., Drexel Inst., Phila- delphia, Pa.....	Jan. 17, 1921	
KREFELD, WILLIAM JOHN. Instr., Dept. of Civ. Eng., } Jun.	Mar. 2, 1915	
Columbia Univ. (Res., 74 West 102d St.), New } Assoc. M.	Jan. 17, 1921	
York City.....		
LEUE, CONRAD FERDINAND. 1806 Cresswell St., Shreveport, La.....	July 6, 1920	
MACKINNON, JOHN HAROLD. 1466 Grand Concourse, New York City....	Jan. 17, 1921	
McCLARY, GEORGE BREWER. Civ. and Structural Engr. (George B. McClary & Co.), 343 South Dearborn St., Chicago, Ill.....	Jan. 17, 1921	
McMILLAN, FRANCIS CONOVER. Draftsman and Field Engr., Los Angeles County Flood Control Dist., Box 153, R. D. No. 3, Pasadena, Cal..	Jan. 17, 1921	
MANSFIELD, MYRON GORTON. Asst. Engr., Morris Knowles, 7046 Penn Ave., Pittsburgh, Pa.....	Oct. 11, 1920	
MARK, COLEMAN BROWN. Div. Engr., Pennsylvania State Dept. of Health, 604 North 3d St., Harrisburg, Pa.....	Jan. 17, 1921	
MATTHEWS, THOMAS BAKER. 14 Eighth Ave., N. E., Ardmore, Okla....	Dec. 6, 1920	
MERCKEL, FREDERICK GEORGE. Columbia Boulevard, Morse- } Jun.	April 17, 1917	
mere, N. J..... } Assoc. M.	Jan. 17, 1921	
MOSKOWITZ, JACK. Highway Engr., U. S. Bureau of Public Roads, Port- land, Ore.....	Jan. 17, 1921	
OKUBO, TOSHIYUKI. Care, Truscon Steel Co. of Japan, } Jun.	Sept. 9, 1919	
Uchisaiwaicho, Kojimachi, Tokyo, Japan..... } Assoc. M.	Jan. 17, 1921	
PFEIFFER, GEORGE FREDERICK. Deputy County Engr., Summit County; Bridge Engr., East Market St. Extension, East Akron, Ohio....	Jan. 17, 1921	

ASSOCIATE MEMBERS (Continued)

		Date of Membership.
PICKWORTH, JOHN WILLIAM. Care, S. C. Weiskopf, 11 East 42d St., New York City.....		Jan. 17, 1921
POLLITT, EDWARD. Structural Engr., Am. Bridge Co., 1225 Wakeling St., Frankford, Philadelphia, Pa.....		Jan. 17, 1921
RASMUSSEN, RASMUS. 415 Tenth St., Portland, Ore.....		Jan. 17, 1921
REINKE, JOHN GEORGE. Asst. to Head of Constr. Dept., National Cash Register Co., 2143 North Main St., Dayton, Ohio.....		Jan. 17, 1921
RHEINSTEIN, ALFRED. Builder (Rheinstein & Haas, Inc.); Secy. and Treas., Nathan Mfg. Co., 21 East 40th St. (Res., 344 West 89th St.), New York City.....	} Jun. } Assoc. M.	Jan. 2, 1912 Jan. 17, 1921
RIDDLE, CHARLES DOUGLAS. Lieut., C. E. C., U. S. N., Marine Barracks, Parris Island, S. C.....		Dec. 6, 1920
SATTERFIELD, RAYMOND POOL. Field Engr., Portland Cement Assoc., 909 Southwestern Life Bldg., Dallas, Tex.....		Jan. 17, 1921
SCANLAN, JACK ADDISON. Dist. Engr., Paul J. Kalman Co., Inc., 447 Fullerton Ave., Chicago, Ill.....		Dec. 6, 1920
SCHOONMAKER, GEORGE NELSON. Commr., Dept. of Public Works, Div. of Water, 716 Stickney Ave., Toledo, Ohio.....		Dec. 6, 1920
SCHROEDER, SEATON, JR. Secy. and Treas., William T. } Anderson, Inc., 33 Brunswick Rd., Montclair, N. J. } } Assoc. M.	Jun. } Assoc. M.	Mar. 4, 1913 Jan. 17, 1921
SEIBERT, EDWARD CLEVER. Lieut., C. E. C., U. S. N.; Civ. Engr., Public Works Dept., Navy Yard, Washington, D. C.....		Jan. 17, 1921
SHERIDAN, ARTHUR VINCENT. 2454 Webb Ave., New York City.....		Aug. 9, 1920
SPRINGER, GEORGE PERRY. With Constr. Div., U. S. War Dept., 2312 Woodridge St., N. E., Washington, D. C.....		Jan. 17, 1921
STAFFORD, HARLOWE MCVICKER. Office Engr., Corcoran } Irrig. Dist., Corcoran, Cal..... } } Assoc. M.	Jun. } Assoc. M.	Oct. 10, 1916 Jan. 17, 1921
STEPHENS, UEL. County Engr., Runnels County, Bellinger, } Tex. } } Assoc. M.	Jun. } Assoc. M.	Jan. 15, 1917 Jan. 17, 1921
STONER, DAVID SCOTT. 309 Grant Bldg., San Francisco, Cal.....		Dec. 6, 1920
STRAUB, ERNEST JOSEPH. Superv. and Constr. Engr., 3123 Broadway Boulevard, Kansas City, Mo.....		Jan. 17, 1921
SUCHER, THEODORE RICHARD. Supt., Gas Distrib., New Haven Gas Light Co., 80 Crown St., New Haven, Conn.....		Jan. 17, 1921
TUCKER, HARRY. West Raleigh, N. C.....		Nov. 9, 1920
VAN DYKE, CHARLES WILLIAM. Mgr., Technical Dept., } L. Sonneborn Sons, Inc., 262 Pearl St., New York } City } } Assoc. M.	Jun. } Assoc. M.	Sept. 9, 1919 Jan. 17, 1921
VON ROY, FRED, JR. Res. Engr., Highway Dept., Greenbrier County, Box 262, Rainelle, W. Va.....		Jan. 17, 1921
WAGNER, JOHN, JR. Structural Draftsman, P. R. R., } Broad St. Station, Philadelphia, Pa..... } } Assoc. M.	Jun. } Assoc. M.	Mar. 4, 1914 Jan. 17, 1921
WALKER, LELAND ROSS. Designer, Imperial Irrig. Dist., Box 333, Calexico, Cal.....		Nov. 9, 1920
WEBB, CHAUNCEY EARL. Squad Foreman, Detail and } Design, Am. Bridge Co. (Res., 701 Polk St.), } Gary, Ind..... } } Assoc. M.	Jun. } Assoc. M.	Dec. 31, 1913 Jan. 17, 1921
WILLIAMS, MELVIN DELANO. Highway Engr., U. S. Bureau of Public Roads, 403, Col. Hudson Bldg., Ogden, Utah.....		Jan. 17, 1921

ASSOCIATE MEMBERS (*Continued*)Date of
Membership.

YAMADA, YUTAKA. Chf. Hydr. Engr., Toyo Aluminum Co., Ltd., 37-2 Aoyama Minamicho, Tokyo, Japan.....	Nov. 9, 1920
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ASSOCIATES

SLEEPER, HARRY ARTHUR. Care, F. F. Woodbury & Sons Co., Man- chester, N. H.....	July 6, 1920
SMITH, DUNCAN CAYRE. With Aluminum Ore Co., 3300 Missouri Ave., East St. Louis, Ill.....	Jan. 17, 1921

JUNIORS

FRANZEN, CHARLES SIEGLE. Structural Steel Detailer, McClintic-Marshall Const. Co., 2142 South 20th St., Philadelphia, Pa.....	Jan. 17, 1921
HATCH, DONALD MONROE. Supt., Light, Water and Filter Plants, City of Wyandotte, Wyandotte, Mich.....	Dec. 6, 1920
HEIM, ARTHUR IRVING. Office Engr., Foote Eng. Co., Meridian, Miss....	Jan. 17, 1921
HUBBELL, HOWARD ADAMS. Asst. Engr. with Gardner S. Williams, Cörnwell Bldg., Ann Arbor, Mich.....	Jan. 17, 1921
LEFF, MAX. Care, Postmaster, Derry, Pa.....	Nov. 9, 1920
MEYER, HARRY HELMUTH. Senior Draftsman, N. Y. C. R. R., 750 Court- landt Ave., New York City.....	Jan. 17, 1921
O'REILLY, ANTHONY RAUEN. Civ. Engr., Bureau of Water, City of Reading, 226 Clymer St., Reading, Pa.....	Dec. 6, 1920
PEOTTER, GEORGE EDWARD. 1112 Lawrence St., Appleton, Wis.....	Dec. 6, 1920
PETTIT, HOMER BANISTER. Lieut., Corps of Engrs., U. S. A., 6th U. S. Engrs., Camp Pike, Ark.....	Dec. 6, 1920
PILOFF, ALBERT KAY. 89 Bainbridge St., Brooklyn, N. Y.....	Nov. 9, 1920
RANDALL, ALEXANDER BURTON. Philadelphia Representative, C. W. Leavitt, 209 South 16th St., Philadelphia, Pa.....	Nov. 9, 1920

REINSTATEMENTS

MEMBERS

Date of
Reinstatement.

GARRETT, JAMES EDWIN.....	Jan. 17, 1921
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ASSOCIATE MEMBERS

HART, LAURANCE HASTINGS.....	Jan. 17, 1921
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RESIGNATIONS

MEMBERS

Date of
Resignation.

ADAMS, FREDERICK.....	Dec. 31, 1920
ALBERTSON, CHARLES.....	Dec. 31, 1920
BAYLISS, RAWLINSON TENNANT.....	Dec. 31, 1920
BENEDICT, HAROLD WILLOUGHBY.....	Dec. 31, 1920
BRADLEY, DANIEL EDWARD.....	Dec. 31, 1920
CHAPPELL, THOMAS FENNING.....	Dec. 31, 1920
CONNOR, SAMUEL POWERS.....	Dec. 31, 1920
DILLMAN, GEORGE LINCOLN.....	Dec. 31, 1920
DONOVAN, CORNELIUS.....	Dec. 31, 1920
EMBURY, AYMAR, 2d.....	Dec. 31, 1920
FELTON, BURTON ROGERS.....	Dec. 31, 1920
HOUGH, ULYSSES B.....	Dec. 31, 1920

MEMBERS (Continued)

	Date of Resignation.
INGALLS, OWEN LOVEJOY.....	Dec. 31, 1920
KLINCK, JOHN HENRY.....	Dec. 31, 1920
McKINSTRY, CHARLES HEDGES.....	Dec. 31, 1920
MINOR, CYRUS EDWARD.....	Dec. 31, 1920
NOSTRAND, PETER ELBERT.....	Dec. 31, 1920
PALMER, GEORGE FREDERICK.....	Dec. 31, 1920
RAIKES, HUGH PERCIVAL.....	Dec. 31, 1920
REYNDERS, JOHN VAN WICHEREN.....	Dec. 31, 1920
ROSS, ALEXANDER BELL.....	Dec. 31, 1920
ROURKE, JOSEPH ALOYSIUS.....	Dec. 31, 1920
STEEF, JAMES BIGELOW.....	Dec. 31, 1920
STOCKETT, ALFRED WALTON.....	Dec. 31, 1920
STREET, LEONARD LEE.....	Dec. 31, 1920
VAUGHAN, CHARLES HERBERT.....	Dec. 31, 1920
WALDRON, ALBERT EDWIN.....	Dec. 31, 1920
WEBER, ALEXANDER HAMILTON.....	Dec. 31, 1920
WILDER, CLIFTON WHITE.....	Dec. 31, 1920
WILSON, FREDERICK CHARLES.....	Dec. 31, 1920
WOOD, FREDERIC JAMES.....	Dec. 31, 1920
WYNN, WESLEY AKERS.....	Dec. 31, 1920

ASSOCIATE MEMBERS

BARKER, CHARLES WHITNEY TILLINGHAST.....	Dec. 31, 1920
BICKERTON, WILBUR EARL.....	Dec. 31, 1920
BIGGS, CARROLL ADDISON.....	Dec. 31, 1920
BURR, FRANK MARVIN.....	Dec. 31, 1920
CALDWELL, JOHN WORDE.....	Dec. 31, 1920
CHIVERS, NORMAN MOORE.....	Dec. 31, 1920
COMPTON, ARTHUR MANDEVILLE.....	Dec. 31, 1920
CORLETT, BERTRAM EDWIN.....	Dec. 31, 1920
CUNNINGHAM, STANLEY.....	Dec. 31, 1920
DODGE, RALPH EMERSON.....	Dec. 31, 1920
DRAYTON, NEWBOLD.....	Dec. 31, 1920
EGBERT, WARREN.....	Dec. 31, 1920
EMERSON, KENNETH BALES.....	Dec. 31, 1920
FRISBIE, HENRY CHARLES.....	Dec. 31, 1920
GILBERT, ARCHIBALD MARVINE.....	Dec. 31, 1920
GOODMAN, HARRY MINOTT.....	Dec. 31, 1920
GOULD, CHESTER MASON.....	Dec. 31, 1920
GRAVES, GEORGE AUGUSTUS.....	Dec. 31, 1920
GREENMAN, RUSSELL SOULE.....	Dec. 31, 1920
GREGORY, WHITNEY IRWIN.....	Dec. 31, 1920
HALDEMAN, WALTER STANLEY.....	Dec. 31, 1920
HARPER, FREDERICK CLAYTON.....	Dec. 31, 1920
HASTINGS, HUDSON BRIDGE.....	Dec. 31, 1920
HICKS, WILLIAM FREDERICK.....	Dec. 31, 1920
HOLLIDAY, ROBERT FLEMING.....	Dec. 31, 1920
JONES, THOMAS JOHN.....	Dec. 31, 1920
KELLY, WARREN WINFIELD.....	Dec. 31, 1920
LANNAN, LOUIS EDGAR.....	Dec. 31, 1920

ASSOCIATE MEMBERS (Continued)

Date of
Resignation.

LEAL, HENRY WAY.....	Dec. 31, 1920
LINCOLN, LEVI BATES.....	Dec. 31, 1920
LYNCH, TILLMAN DAVIS.....	Dec. 31, 1920
MANNING, WILLIAM SHEPPARD, JR.....	Dec. 31, 1920
MASSENBURG, WALTER GRAY.....	Dec. 31, 1920
MAUL, THEODORE RUSSELL.....	Dec. 31, 1920
MOORE, SHERMAN.....	Dec. 31, 1920
MORROW, SAMUEL ROY.....	Dec. 31, 1920
PATERSON, CHARLES JUDSON.....	Dec. 31, 1920
PRATT, RICHARD ALEXANDER.....	Dec. 31, 1920
PYZEL, EWALD.....	Dec. 31, 1920
QUINBY, CHARLES EDWARD.....	Dec. 31, 1920
REYNOLDS, LAFAYETTE CLOWE.....	Dec. 31, 1920
RICKARD, JOHN PHILIP.....	Dec. 31, 1920
SANGER, EDMUND PHIPPS.....	Dec. 31, 1920
SEARS, WALTON HARVEY.....	Dec. 31, 1920
SMITH, HERBERT JAMES.....	Dec. 31, 1920
SPRAGUE, EDWIN LORING, JR.....	Dec. 31, 1920
SWARTWOUT, ROY ADOLF.....	Dec. 31, 1920
TEICHERT, ADOLPH, JR.....	Dec. 31, 1920
VAN VLECK, JAMES BRACKETT.....	Dec. 31, 1920
WALL, GEORGE ALBERT.....	Dec. 31, 1920
WASSNER, MICHAEL.....	Dec. 31, 1920
WATSON, DAVID LOYALL FARRAGUT.....	Dec. 31, 1920
WEISS, HERMAN OTTO.....	Dec. 31, 1920
WERBIN, ISRAEL VERNON.....	Dec. 31, 1920
WESTOVER, HENRY CHRISTOPHER.....	Dec. 31, 1920
WOOD, CHARLES HANCOCK.....	Dec. 31, 1920
ZACHRY, JOHN LOW.....	Dec. 31, 1920

ASSOCIATES

BRAINE, LAWRENCE FULTON.....	Dec. 31, 1920
CHAPMAN, MELLVILLE DOUGLAS.....	Dec. 31, 1920
HEADLEY, WILLIAM THOMAS.....	Dec. 31, 1920

JUNIORS

ALBER, HARRY CONRAD FRANCIS.....	Dec. 31, 1920
BEARD, VIVIAN DANGERFIELD.....	Dec. 31, 1920
COOK, CLARENCE WESTGATE.....	Dec. 31, 1920
CRANE, WILL EDWIN.....	Dec. 31, 1920
DU PRE, WALLACE DUNCAN.....	Dec. 31, 1920
DURFEE, WALTER HETHERINGTON.....	Dec. 31, 1920
HORAN, HAROLD JOSEPH.....	Dec. 31, 1920
PRESTON, JOHN OWINGS.....	Dec. 31, 1920
QUINCY, EDMUND.....	Dec. 31, 1920
RENSHAW, ALFRED.....	Dec. 31, 1920
WATSON, DAVID MOWAT.....	Dec. 31, 1920

DEATHS

ARMSTRONG, ANTHONY GEORGE. Elected Associate Member, November 9th, 1920; died January 24th, 1921.

HUMPHREYS, DAVID CARLISLE. Elected Member, November 2d, 1887; died January 11th, 1920.

KNOCH, JULIUS JAMES. Elected Associate Member, October 2d, 1901; died September 26th, 1920.

ROBINSON, WILLIAM HARPER. Elected Member, March 1st, 1910; died December 29th, 1920.

SATTLEY, ROBERT CARLOS. Elected Member, September 3d, 1913; died December 31st, 1920.

SCHNEEWEISS, ADOLPH EUGENE. Elected Member, October 5th, 1909; died December 25th, 1920.

SKILTON, GEORGE STEELE. Elected Member, September 7th, 1881; died January 10th, 1921.

SMITH, M. EVERHART. Elected Member, May 7th, 1879; died January 24th, 1921.

Total Membership of the Society, February 3d, 1921,
9 874.